ESTABLISHED IN 1872

PAPER TRADE JOURNAL

PAPER

SIXTY-FOURTH YEAR

PAPER

Established Feb. 17, 1899
Consolidated Nov. 16, 1899
with PAPER TRADE JOURNAL.

Vol. CI, No. 6 Thursday, August 8, 1935

Established Sept. 21, 1910
Consolidated Feb. 19, 1925
with PAPER TRADE JOURNAL.

Maine Wants Newsprint Industry Stabilized

State Congressional Delegation Urges President to Take Advantage of Proposed Trade Agreements to Introduce Simple Quantitative Regulations to Be Applied on a Tonnage or Percentage Basis to Newsprint Produced in U. S. and Canada and Extend These Quotas to Other Minor Supplies Such as Newfoundland, Sweden, etc.

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D, C., August 7, 1935—The Congressional delegation from Maine last week filed memoranda with President Roosevelt in connection with newsprint paper and pulp in the Swedish and Canadian reciprocity trade agreements. The presentations were made on behalf of the Maine industry.

"With the presentation to you today of a statement covering the newsprint industry of Maine we also bring to your attention the problem of the pulp and pulpwood interests of our state," said the brief.

"In the trade agreement recently negotiated with Sweden," it continues, "certain kinds of pulp were bound on the free list. We urge that there be not included in future trade agreements further or additional commitments of this character or any enlargement of this binding principle with respect to pulp or pulpwood. If, however, you should feel constrained to approve other agreements of this nature, we would earnestly ask that imports of these articles, both from Sweden and from all other countries with which such trade agreements are made shall be subjected to such quantitative limitations or quotas as to make possible the protection and preservation of these American industries."

The memoranda in detail are as follows:

Memorandum to The President From The Maine State Delegation in Congress, Concerning the Treatment of Pulpwood, Pulp and Newsprint in the Trade Agreement Now Being Negotiated Between the United States and Canada.

The people of Maine, having learned that a Reciprocal Trade Agreement is being negotiated with Canada, realizing the tremendous importance of forest products in the economic life of the State, and knowing of the extreme distress of the newsprint industry and its bearing upon the condition of farm woodlot owners, timberland owners, woodsmen, mill labor, and all other classes of citizens directly and indirectly affected, are appealing to Senators and Members of the House of Representatives by letters, resolutions petitions and otherwise, to do whatever is within our power to aid the Administration in the negotiations in question by advising you that they are convinced that greater disaster than has yet come to them will visit them if pulpwood, pulp and newsprint are bound or frozen on the free list in this pending Trade Agreement without any control features.

They are aware of the policy already adopted by the Administration of binding free list items in trade agreements and extending the benefits of freezing these items to all other countries on the basis of Unconditional Most Favored Nation Treatment.

They have learned with especial concern of the new arrangement to extend this treatment to Russia, because that country is particularly well situated to ship great quantities of pulpwood and perhaps also pulp and newsprint to this country—in addition to the already serious competition now coming primarily from Canada, Newfoundland and certain northern European countries.

Under the circumstances they are appealing to the Administration to take advantage of this situation to stabilize the industry in question rather than adding to the existing chaos. They are convinced that this can be done by introducing certain very simple quantitative regulations to any provision for Freezing these items on the free list, in the form of quotas, to be applied either on a tonnage or percentage basis to the newsprint produced in the United States, and in Canada and that these quotas be extended to other minor suppliers such as Newfoundland, Sweden, Finland and other foreign areas.

Members of the Maine delegation have considered their fears and studied their request and believe that both are well founded. We therefore unanimously endorse their position, herewith present it to you, and urge its favorable consideration.

Memorial To The President. Submitted by the Senators and Members of the House of Representatives, Constituting the Congressional Delegation from the State of Maine Concerning the Stabilization of the Newsprint Industry in the United States and Canada as an Incident in the Pending United States-Canadian Trade Agreement.

MAINE AND THE PROBLEM OF REFORESTATION, CONSERVATION, FOREST MANAGEMENT AND THE ECONOMIC CURRENT UTILIZATION OF FOREST PRODUCTS

We know that we need not burden you with a detailed statement of the tremendous importance of forest products in the economic life of Maine. We feel especially fortu-

(Continued on page 24)

Ground Wood Paper Manufacturers Optimistic

Demand Continues Fairly Persistent, With Outlook for Future Promising—Fine Paper Mills Experience Usual Midsummer Lull—Quotations Continue Steady and Unchanged—Position of Kraft Paper Industry Considered Satisfactory

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., August 5, 1935—Despite some torrid weather the Chicago paper industry is in a most pleasing mood. Reports from the groundwood division are most encouraging while all lines are pointing to numerous signs of substantial improvement just ahead. Looking somewhat beyond the industry itself, Chicago was host to thousands of retail merchants during the past two weeks, these merchants buying an unusually large quantity of merchandise in the expectancy that the retail business this Fall will be exceptionally good. This sentiment naturally reflects a pleasing picture for the paper industry as retailers are consumers of an appreciable amount of various kinds of paper. Local advertising executives have also reported a considerable increase in plans for Fall merchandising programs.

Fine Papers Stable

At present the market is featureless as far as any marked changes are concerned. Fine paper markets are stable, with sulphite bonds and kindred lines continuing to taper off as the summer slack season reaches its peak. Books and covers changed little during the week. The kraft industry found some improvement in the retail situation encouraging and markets were reported satisfactory. Newsprint reported no changes. The board market is drifting along with high hopes for Fall. Waste papers produced little in the way of excitement, buyers seemingly well fortified with supplies for the time being.

Wakana Paper Mill Sold

The Wakana Paper Mills company plant, which formerly manufactured a widely known line of sulphite and bond papers at its plant at Mishawaka, Indiana, has recently been sold to Lloyd A. Fry, a business man of Chicago. The plant has been closed for seven years and was sold at a sheriff's sale to satisfy a judgment of a Chicago bank amounting to $335,000. Mr. Fry plans to re-open the plant at once for the purpose of manufacturing a new building material.

Occupational Tax Problem

The perplexing problem of what constitutes a retail sale is still bothering Chicago mill supply houses, paper retailers, jobbers, etc. The Illinois Retailers Occupational Tax of 3 per cent applies on all sales to the ultimate consumer and for the most part includes items used in the production or fabrication of other items which eventually find themselves to retail counters and to retail sales as commonly known.

There is one case of a merchant supplying paper who has stores on the border line of both Illinois and Indiana. This merchant ships paper to Indiana customers from his Illinois store thus escaping the small Indiana tax and ships paper to Illinois customers from his Indiana store thus escaping the Illinois 3 per cent sales tax.

This type of competition, which is indulged in by many outside the state firms who can sell to Illinois customers without adding the tax, is very difficult for certain branches of industry to meet. If a company is not registered as a corporation in Illinois it is understood that the salesmen of the company can take orders in Illinois and have the merchandise shipped into the state tax free because of inter-state commerce regulations.

Problem Perplexes Illinois Industry

Either Illinois companies affected by this competition must absorb the heavy 3 per cent charge—virtually an impossibility—or eventually move outside the State and maintain a sales force within the State to service customers. The entire problem has Illinois industry quite perplexed including all paper firms selling merchandise to what is constituted as the ultimate consumer. Despite favorable rulings obtained by the coarse paper industry the situation still continues to be serious in many instances. The only possible solution aside from those recited above is an amendment to the Illinois law permitting elimination of "production sales" from the provisions of the tax.

News of the Industry

A number of paper and supply manufacturers attended a summer meeting of the Chicago Safety Council, held on July 18, at which the subject of "The Use of Salt in Drinking Water to Prevent Heat Cramps and Fatigue" was discussed by Dr. P. H. Kennedy of the Youngstown Sheet and Tube Company. The discussion discussed fatigue laboratory work and its relation to employees; heat exhaustion causes and remedies and recommended that salt be used in drinking water in industrial plants, 1 per cent as a preventive measure against cramps. The program was one of a series carried on by the local council in the interests of accident and sickness prevention in Chicago and Illinois industrial plants.

Illinois manufacturers of paper and paper supplies are finding the Illinois Department of Labor very much in earnest in enforcing the recently enacted six-day week law. The law gives the Department the opportunity to closely study the situation, advise all firms of enforcement and then to proceed to check any industries not observing the provisions of the six day week law. The Department, as part of a special board, also has the power to investigate minimum wages paid in the Illinois territory and to set minimum wages when conditions are deemed to merit such action.

A number of Chicago and midwestern executives returned the latter part of the week from the Ground Wood Association sessions held in New York City the first part of the week. Included in the group were Charles Sage, Kimberly-Clark Company, Neenah; George Fay, Mead Sales, Chicago and J. H. Coy, Flambeau sales executive located in Chicago.

Chicago also had representatives at the book paper meetings also held in New York. Ground wood representatives returned from the East considerably encouraged over actual business conditions and quite willing to comment on the optimism and actual business improvement registered within the past sixty days.

Betterment in the durable goods industry was taken as the most pleasing part of the picture. Ground wood markets in Chicago have shown material upturn during the past sixty days but the almost universal feeling of optimism is regarded as the most encouraging sign.

Wisconsin River Water Power Project Approved

Second Unit In $15,000,000 Wisconsin River Improvement Co.'s Program of Uniform Water Flowage for Power Purposes to Be Started This Autumn—To Be Financed by Consolidated Water Power & Paper Co., One of Beneficiaries of Plan

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., August 5, 1935.—Approval has been given the Wisconsin Valley Improvement Company by the Wisconsin Public Service Commission for the second unit in its $15,000,000 program of uniform water flowage for power purposes in the Wisconsin River. The commission has authorized creation of the Big Eau Pleine reservoir, on which construction probably will be started in the fall. The project is being financed by the Consolidated Water Power and Paper Company, one of the beneficiaries of the uniform flowage.

This project calls for the construction of a dam across the Big Eau Pleine River three miles west of Knowlton, Wis., the digging of a canal from the Wisconsin River near Mosinee, Wis. to the reservoir, and the flooding of approximately 7,000 acres of land. Originally the company intended to construct a tunnel from the Big Eau Pleine Valley to the Little Eau Pleine Valley to create a supplementary reservoir, but later the plan was abandoned in favor of the canal project.

Assurances had been given by the company that 85 per cent of the agricultural lands affected had been purchased, and the permit was then forthcoming. The company also agreed to repair all highways damaged by high water. The commission ruled that entire farms need not be purchased where only a part of them is affected by the flooding, and that the lands on which flowage rights have been secured are construed as being purchased.

The first unit in the flowage control plan is the Rainbow reservoir, near Rhinelander, Wis., at the head of the Wisconsin River. A large crew is working on the control dam which will back up the water for seven miles and will create a large lake.

Legislative approval of the reservoir system in the Big and Little Eau Pleine rivers is expected to be forthcoming through a bill now under consideration. It has passed the Wisconsin Assembly, and is now before the Senate. The bill stipulates that at least $100,000 must be spent in Wood and Portage counties within a year after enactment, and that all lands needed must be purchased within two years. The value is to be based on not less than its average for the last ten years.

Oppose Processing Taxes

Success to the extent of obtaining a temporary injunction rewarded the efforts of paper towel manufacturers and jobbers in Wisconsin to put an end to the Agricultural Adjustment Administration processing taxes. The taxes were based on the assumption that paper towels competed with cotton towels and therefore should pay.

The injunctions were issued by Federal Judge F. A. Geiger in the United States court for the Eastern district of Wisconsin at Milwaukee, Wis., following hearings last week. The companies listed as plaintiffs are the Fort Howard Paper Company, the Hoberg Paper and Fibre Company, and the Bay West Paper Company, of Green Bay, Wis., and the Central Paper Company, of Menasha, Wis. They attacked the constitutionality of AAA and pointed out through their attorneys there is no method of obtaining a refund from the government for processing taxes paid during the pendency of an ordinary civil suit. hence their request for an injunction. They also declared they have not been able to pass the taxes on to their customers.

L. Hugo Keller, assistant U. S. attorney, argued that a special refunding act covered the taxes, but the court disagreed with him. The injunctions will be effective until a trial is held on the issues involved.

News of the Industry

Whether pulpwood shipments by barge are preferable to rail delivery will be determined by the Kimberly-Clark Corporation, Neenah, Wis., through experimental deliveries now in progress. The Fox River Navigation Company's tugs are bringing barge loads of wood up the Fox River to the mills from the Great Lakes docks at DePere, Wis. The mill at Kimberly, Wis., is being supplied in this manner. Occasional shipments have been made by barge in the past, but were discontinued several years ago.

The fall session of the Lawrence Institute of Paper Chemistry at Appleton, Wis., will begin September 17. Sixteen first year students, all graduates of various colleges and universities, have been enrolled. John Strange, of Neenah, Wis., who has been secretary of the central grading bureau of the Paper Industry Authority in New York for the last year, has returned to the Institute to serve as assistant to the executive secretary, Westbrook Steele. The board of trustees of the Institute met July 30 at the Ritz-Carlton hotel in New York. Those from Wisconsin attending included Ernst Mahler, vice-president of the Kimberly-Clark Corporation, Neenah, Wis., president of the board; Westbrook Steele, executive secretary, and Ralph J. Watts, treasurer, of Appleton, and D. K. Brown, of the Neenah Paper Company, Neenah.

Hundreds of tons of weeds have been cut from the flumes of the Neenah Paper Company, the Kimberly-Clark Corporation, and the Bergstrom Paper Company of Neenah, Wis. A crew of forty men worked day and night for several weeks to remove the obstructions which had floated down stream to the flumes.

Approximately 1,000 persons attended the first annual picnic of the Gilbert Paper Company, Menasha, Wis., on Saturday, July 27. Baseball games and other contests enlivened the occasion, a picnic supper was served, and the evening was spent in dancing. Talks were given by company officials and representatives of the employees, and numerous prizes were awarded. The company expects to make this outing an annual event.

William Sinclair, of Hartford City, Ind., has been engaged as night superintendent at the Nicolet Paper Company, DePere, Wis. He formerly was employed with the company, but resigned in 1927.

Holyoke Canals Have Annual Shutdown

HOLYOKE, Mass., August 6, 1935—The annual shutdown or drawing the water out of the canals of the Holyoke Water Power Company took place Friday and the canals were full again yesterday. This is done annually so that the manufacturers may make repairs and minor changes to their plants.

Big Construction Program Announced for Coast

Mutual Pulp & Paper Mills of Prince Rupert, Ltd., Decide to Erect Five Million Dollar 250-Ton Bleached Sulphite Plant—Construction Period Approximately Eighteen Months—Company Controls 4,500,000,000 Feet of Titled Timber

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., August 5, 1935—Word comes from British Columbia that officials of the Mutual Pulp and Paper Mills of Prince Rupert, Ltd., have announced that they have decided to construct a $5,000,000 250-ton bleached sulphite pulp mill at Prince Rupert as soon as necessary details can be worked out. The company will employ some 2,000 men, including those who will be engaged in logging. The construction period will be about eighteen months, and logging operations will be started before construction is completed. The company controls 4,500,000,000 feet of titled timber on Queen Charlotte Island and on the Skeena River. Power will be taken from the Northern British Columbia Power Company, augmented by what the company may produce itself.

Jap Mill Magnate Visits Canada

Ginzaburo Fujiwara, head of the Oji Paper Mills combine and one of the industrial magnates of Japan, has arrived in Canada. He is reported as saying he intends to study, as far as possible, the paper and woodpulp manufacturing industries in Western Canada, and also to observe allied activities, such as the forestry service and the lumbering industry. He is quoted as denying his visit had anything to do with the trade deadlock between Japan and Canada as a result of which the Japanese Government is about to impose a surtax of 50 per cent. on lumber and pulpwood and other leading Canadian exports to Japan with the effect of shutting them out. Mr. Fujiwara's corporation operates vast lumbering, wood pulp and paper industries in Hokkaido, Karafuto (Japanese Saghalin) and elsewhere, and is the leading organization of its kind in Japan. Due to the fact that Japan's pulp and paper industries have been unable to keep up with the increased demand, large quantities have to be imported from abroad, and Canada has been supplying a fair portion of this. Mr. Fujiwara expects also to visit Alaska before his return to Japan.

Red Cross Takes Over Abitibi Hospital

Answering a desperate appeal from the town's surrounding municipalities of Espanola, the Red Cross will take over full operation of the hospital there which was to have been closed, it was announced at a meeting of the Red Cross in Toronto this week. The hospital was built and operated originally by the Spanish River Pulp and Paper Mills, and taken over by the Abitibi Power and Paper Co. It served not only the town of Espanola but a district containing 21 municipalities and 33 schools, a total of 9,000 people. The step will prove of great benefit to the many pulp and paper workers in the district. The Red Cross will pay the Abitibi Power and Paper Company a nominal rental for the use of the hospital and a yearly deficit in the neighborhood of $2,500 is expected.

Lower Power Rates for Paper Mills

Approval was given this week by the Fort William hydro commission to the proposed new schedule of lower power rates for lake head pulp and paper mills, following conferences with the Ontario commission and newsprint executives in Toronto last week. The proposed rate reduction scheme is as follows: Great Lakes Paper Company, present minimum 9,000 h.p.; Thunder Bay Pulp and Paper Company, present minimum 10,750 h.p. Both of these companies are at present paying $21 per h.p. It is proposed that each company pay $21 per h.p. up to and including 10,000 h.p. The next 1667 h.p. will be free but after the loads become 11,667 h.p. all power will be paid for at the rate of $18. At the present time the Great Lakes load is about 12,000 h.p. and the Thunder Bay plant above 10,000 h.p. The Provincial Paper Company's present minimum is 9,000 h.p. and the rate is approximately $21.34 per h.p. per annum. It is proposed that the company pay $21 per h.p. and including up to 3,000 h.p.

Charges Forestry Department Dead

"The Forestry Department in Ontario is dead, I have no hesitation in saying this," declared Havelock Robb, noted forestry expert at a public meeting in Kingston, Ont., this week. "I think a little dynamite under it would do a lot of good. I know there are a lot of men and women in the department who would sacrifice their lives in forest fires. They know what should be done but just when they should be out telling the people what is causing all the floods they are sitting at Queen's Park sending out a lot of letters."

To Push Pulpwood Cutting

About 2,000 men are working in the woods around Fort William and operations in pulpwood camps will be carried on at top speed for the balance of the peeling season, which will last from two to three weeks longer, it is stated by operators with headquarters at Fort William. More district operators reported that they have increased the number of men in their camps, as compared with the number working before the strike, in an effort to fill as large a percentage as possible of their contracts. Some of them said that, even with the most favorable conditions and larger gangs of men, it will be impossible to fill the contracts entirely.

Great Lakes Paper Affairs

Recent forecasts made by financial interests identified with the newsprint industry that pronounced correctives in the industry might come suddenly have aroused considerable speculation, and the suggestion is made that achievement of reorganization plans in connection with several large concerns, including Abitibi, Price Bros., and Great Lakes Paper is a preliminary. The sale of Great Lakes Paper Company may give a lead. Current reports are that four different groups are interested in obtaining control of Great Lakes Paper, which has a newsprint mill with a capacity of 100,000 tons annually and is well placed for the mid-west United States market. A strong bid is expected on behalf of the Hearst interests and another bid from publishing interests is reported as likely to emanate from a mid-west group headed by the *Chicago News*. The group interested in a reorganization plan for Abitibi are also likely to make a determined bid for Great Lakes Paper, while a rumor has suggested that International Paper may turn up as a bidder.

More power to you....

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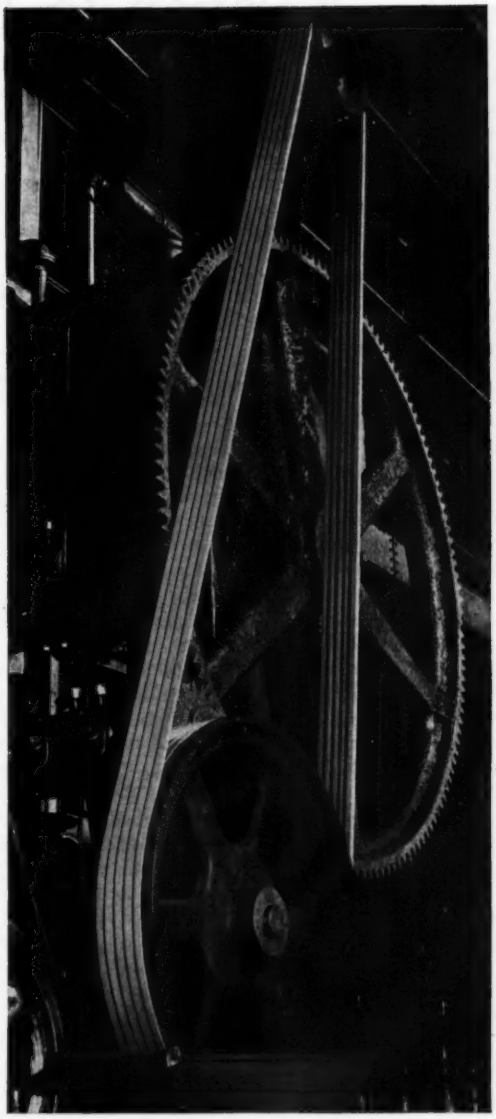

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SPECIALISTS IN QUALITY BELTS SINCE 1903

National Pulp and Paper Requirements in Relation to Forest Conservation

The government has just issued a document entitled "National Pulp and Paper Requirements in Relation to Forest Conservation," by C. E. Curran, in charge pulp and paper section, Forest Products Laboratory, and C. Edward Behre, director of Northeastern Forest Experiment Station, together with the letter of transmittal to the President of the United States Senate by Hon. H. A. Wallace, Secretary of Agriculture. The Conclusion and Recommended Policy contained in this document is printed below. Complete copies of the document may be obtained at 10 cents per copy from the Superintendent of Documents, Washington, D. C.

CONCLUSION

Senate Resolution 205 (73rd Cong., 2d sess.), in response to which this report has been prepared, reads as follows:

Resolved, That the Secretary of Agriculture be, and he is hereby, requested to submit to the Senate at his early convenience a report based on information already available covering—

(a) The extent to which the United States now depends upon imports of pulpwood, pulp, and paper to meet national requirements;

(b) Whether and the extent to which it is now possible with known pulp and paper processes to supply from the forest lands of the United States all of the pulpwood needed to meet the national pulp and paper requirements;

(c) What adjustments are feasible and necessary and what program of forest conservation is recommended for the immediate and more distant future by the Federal Government, the States, the pulp and paper industry, and private owners of forest lands to make the United States self-supporting in its pulpwood, pulp, and paper requirements; and

(d) Whether it would advance or retard the program of forest conservation to make the United States self-supporting as to pulpwood, pulp, and paper requirements from American forests.

The resolution deals primarily with the possibility of making the United States self-supporting in pulpwood, pulp, and paper, considering manufacturing processes and the productive capacity of our forests. It calls specifically for a program of self-sufficiency for the United States, and asks whether such a program would advance or retard forest conservation. It also asks what adjustments to this end are feasible and necessary and this implies consideration of related elements of national well-being.

Volume of Pulpwood, Pulp, and Paper Imports

The United States consumes around 11,000,000 tons of paper annually. This requires over 12,000,000 cords of pulpwood.

More than 50 per cent of these requirements are imported as paper, pulp, or pulpwood, mainly from Canada, Sweden, and Finland.

Imports of paper, almost wholly newsprint and nine-tenths from Canada, total nearly 2,000,000 tons annually. Wood-pulp imports aggregate almost 2,000,000 tons, about 60 per cent being sulphite, almost 30 per cent sulphate, and the remainder mechanical. Soda pulp imports are negligible. Finally, about three-fourths of a million cords of pulpwood are imported, practically all from Canada. In terms of the pulpwood equivalent, paper constitutes around 35 per cent of the imports, wood pulp around 50 per cent, and pulpwood the remainder, of 15 per cent.

The value of all paper, wood pulp, and pulpwood imports was $140,207,883 in 1933. Of this total 55 per cent was represented by paper, 41 per cent by wood pulp, and only about 4 per cent by pulpwood.

Forests of the United States Could Supply Present Requirements with Known Processes

The forests of the United States could supply present pulp and paper requirements and this could be done with pulp and paper processes now in commercial use. If national needs for lumber and other forest products were also to be met, permanence could only be assured by sound forestry practices on both private and public forest lands.

Expansion of the domestic pulp and paper industry to provide for national self-sufficiency would have to take place primarily in the South, the Pacific Northwest, and to a lesser extent in Alaska, rather than in the northeastern and lake regions where it has until recently been concentrated. This would involve a substantial broadening of the base of species used, a trend already much in evidence.

Adjustments Which Would Be Required and Program of Forest Conservation Recommended

Major dependence on imports has developed largely as a result of long-standing preference for spruce, which is peculiarly suited for newsprint paper, and for sulphite and mechanical pulps which comprise about 75 per cent of total requirements.

Exclusive need for spruce for mechanical and sulphite pulps has greatly diminished as a result of technical developments. Balsam fir in the East, and other true firs and hemlock in the West are now used in place of spruce with little discrimination, while many hardwoods are similarly used on a limited scale. The ability to use western hemlock has opened the way for extensive development of the pulp and paper industry on the Pacific coast and in Alaska. Research developments point clearly to the extension of the mechanical and sulphite processes to other important native species, notably the southern yellow pines, and to the possibility of a wider use of hardwoods.

Furthermore, pulps manufactured by the sulphate process are rapidly increasing in importance and are being adapted to many purposes formerly supplied only by sulphite pulp. Since sulphate pulp can be made from almost any coniferous species, this indicates a further movement away from the dominance of spruce-fir-hemlock.

A program to make the United States self-supporting in paper and pulp would need to take care of possible future as well as present requirements. There is reason to believe that total future requirements 15 or 20 years hence may be double present consumption. Study of the trends in paper consumption by grades indicates that a possible total of 24,000,000 tons of paper, or pulpwood requirements of 25,000,000 cords a year, would be a reasonable basis if plans were to be made for national self-sufficiency.

Self-sufficiency in present requirements would necessi-

tate a doubling of pulpwood production but only increasing paper production about 20 per cent; future requirements would necessitate increasing paper production more than 2½ times and quadrupling the output of pulpwood.

With the broadening of species used and adaptation of processes such as those already mentioned, pulpwood requirements, even for prospective consumption, could be supplied from the forests of the United States, but this would require vigorous prosecution of a comprehensive forestry program.

The forestry problem involved would not be difficult if pulpwood requirements could be considered independently. But the production of pulpwood cannot be isolated from that of other forest products, and the integration of the growing of timber for lumber and pulpwood should be an important element in a national program of forestry. With such integration, the manufacture of lumber could be restricted to the larger-sized material most economical for this purpose, and pulp mills could utilize the smaller woods material and sawmill waste. In addition, pulpwood would be available from thinnings and other silvicultural operations which would stimulate the production of high-quality sawtimber. If the costs of growing the timber could be borne largely by the sawlogs, the cost of pulpwood would be low. Even in areas where pulpwood might be the major objective of management, growing the timber to relatively large size with selective cuttings at relatively short intervals would probably be the most economical practice.

In any event the possible benefits from meeting pulp and paper requirements would be short-lived and questionable if expansion of the pulp industry involved sacrifices of other forest industries and did not include measures to perpetuate the forest resources. Any new developments in the pulp and paper industry would need to be planned in relation to an assured and permanent supply of low-cost raw material, and this would imply a program of sustained-yield forest management correlated with requirements for other forest products.

Both as to intensity of husbandry and extent of application, present practices in forest management are so far short of what would be needed to meet prospective requirements for all forest products that intensive Nation-wide efforts through both public and private agencies, would be necessary to approach permanent self-sufficiency. Only a program which applied to the forest lands of the Nation as a whole could achieve such an end; without this, there would be no assurance of complete and permanent control of any part of the land, which would be necessary if pulp were to be considered alone.

Research would be needed in all phases of forest management and utilization to insure successful solution of the many technical problems involved in the realization of such a program. Research should open the way for wider use of a large number of species for pulp, make possible the manufacture of better paper at lower cost, and develop the basis for scientific forest management which would assure economic production of an adequate and continuous supply of raw material.

Proper handling of pulpwood growing and timber cutting operations on privately owned land would require public assistance and also some form of public control adequately to safeguard the public interest in forest conservation. Public assistance should be not only through such direct measures as extension of knowledge of forest management, protection of forests from fire, insects, and disease, and equitable taxation, but also indirectly through a large-scale program of public acquisition of forest lands.

As a minimum in public control of timber cutting on privately owned lands such Nation-wide cooperative action as was contemplated under the conservation article of the lumber code and proposed in the pulpwood code might suffice. But adequate results would be more certain under basic legislation applicable to all private forest lands and to all wood-using industries.

The program recommended in "A National Plan for American Forestry," Senate Document No. 12, Seventy-third Congress, first session, would make the United States self-supporting in both its present and probable future pulpwood, pulp, and paper requirements as well as in other forest products. The proper place of forestry in a consistent national program of land use is also discussed in the report by the National Resources Board, part II, Report of the Land Planning Committee.

Properly Planned National Self-Sufficiency Would Stimulate Forest Conservation

Permanent self-sufficiency in both present and prospective pulpwood, pulp, and paper requirements would materially advance a national program of forest conservation.

The utilization of pulpwood would permit the conversion of small-sized material into relatively high-priced products. Conversely, production of pulpwood as an integral part of a comprehensive program of forestry ought to supply abundant raw material for paper manufacture at relatively low cost.

But of perhaps greater significance is the fact that stable outlets for forest products through established industries, such as pulp and paper manufacture, offer the strongest incentive to sustained yield forest management on privately owned forest lands. Without this incentive private ownership will not be interested in forest conservation and the burden of maintaining forest lands would have to be borne largely by the public.

Satisfaction of prospective pulp and paper requirements of 25 million cords of pulpwood annually would contribute directly to the effective use of from 100 to 200 million acres of forest lands, and in providing for all timber products this would indirectly affect the use of the entire 500 million acres of commercial forest land.

An essential feature of forest conservation is the contribution which it can make to economic and social well being.

Self-sufficiency in paper requirements for the future would provide employment for about 243,000 more people than were engaged in the pulp and paper industry in 1929, and would contribute economic stability to a large number of communities in many sections of the country. It might serve to ameliorate conditions in agriculture by providing a steady source of cash income from farm woodlots and a use for submarginal parts of farms, by offering part-time employment to farm labor, teams and trucks, and by otherwise indirectly raising the standard of living in rural sections. On the other hand, substitution of domestic pulp for imported pulp and paper would reduce foreign purchasing power for our exports, and thereby tend to reduce employment in farming and manufacturing industries dependent upon exports. No definite estimates can be made as to how large these indirect costs of self-sufficiency would be.

Related Economic Considerations

While, in compliance with the resolution, the preceding summary deals with forest conservation and national self-sufficiency in pulpwood, pulp, and paper, the problem is so intimately related to other aspects of national policy that other economic factors require consideration. An im-

mediate attempt to establish national self-sufficiency in these products would not be consistent with policies of the administration for restoration of foreign trade, especially in agricultural products. It is therefore necessary to consider the possible disadvantages of self-sufficiency as well as its possible advantages.

Reduction of Imports Might Mean Reduction of Exports

American products exported must be paid for in dollars. Foreigners can obtain the dollars only by selling goods or services to us, borrowing them from us, or shipping us gold or silver. The last two processes cannot be carried on indefinitely; foreign trade based on continual new loans has already been largely abandoned. Any reduction of our commodity imports, therefore, is likely to cause a corresponding displacement in commodity exports.

This relationship is the background for the following considerations:

1. The United States has been a creditor nation since the World War. The most effective if not the only way to enable foreign countries to pay their debts is to maintain or build up imports.

2. Policies of extreme nationalism, which attempted to maintain export markets and yet build up barriers and otherwise refused to accept commensurate imports, have been an important element in the severity of the depression. The foreign trade of the United States in 1933 shrank to only one-third of its 1929 value, agriculture suffering relatively more than industry. The crop reduction program of the Agricultural Adjustment Administration is the result of this narrowed foreign market. Reduction of trade barriers and encouragement of imports should be effective in maintaining and increasing exports and in restoring prosperity, and should be an important phase of national policy.

3. The profitable use of large areas of agricultural lands may depend upon the successful disposal of the exportable surplus of major agricultural crops, especially cotton. This in turn depends in no small degree on the maintenance of a large volume of imports.

4. Full utilization of the large industrial plant capacity of the United States may also depend in part upon exports which can best be encouraged by maintaining or building up the purchasing power of foreign countries through imports.

5. Cessation of pulp and paper imports accordingly might impede recovery and might cause additional unemployment in those portions of agriculture and industry dependent upon exports.

6. Newsprint paper, pulp, and pulpwood together constitute a major item in our trade with Canada, and pulp with north European countries. Replacement of these imports may involve far-reaching economic disturbance, and may add to the problems of agricultural adjustment. Their increase might stimulate our agricultural and industrial exports.

7. American forest lands and the American pulp and paper industry may not be able to compete in price and quality with foreign products, and it might be a wiser national policy to purchase these products with the export of others that can be grown or manufactured more economically at home.

Offsetting Considerations

In arriving at a solution which will be in the highest public interest such factors as those indicated above must be weighed against the following:

FOREIGN TRADE

1. The Secretary of Agriculture has suggested that ability of foreign countries to purchase our goods be built up by removing or lowering tariffs on products which are manufactured only in small quantities in the United States and on those which are produced here under monopoly or so ineffectively that tariffs exceed 50 per cent ad valorem. The United States imposes no tariff barriers on pulpwood, pulp, or newsprint paper, and imports of other grades of finished papers, on which moderate tariffs are imposed, are very small. These products therefore offer little or no opportunity to make concessions which will stimulate foreign purchasing power, although agreeing to keep them on the free list does have an important place in reciprocal trade negotiations. Foreign purchasing power for American products depends not only on our imports of goods but also on expenditures of American tourists abroad, remittances of immigrants, expenditures for foreign shipping, etc. Foreign trade may also be influenced by manipulation of currencies. However, commodity imports is by far the most important item. Reduction of imports may offset any improvement in the other factors. If they remained unchanged while less was imported, exports would have to be reduced correspondingly.

2. Sweden and Finland together, the two most important European countries from which pulp and paper imports are received, take less than 2 per cent of American agricultural exports. Furthermore Sweden has no debts in this country and Finnish debts here are relatively small. Reduction of trade with these countries cannot exert any large direct influence on our agriculture; though it might exert an indirect effect through reducing our industrial exports. Canada, from whom we obtained over 62 per cent in value of all our paper, pulp, and pulpwood imports in 1929, took 9 per cent of our agricultural exports in that year and about 6 per cent in 1933. Pulpwood, pulp, and paper rank high among the products which Canada, Sweden, and Finland can export to the United States, and through multilateral relations their trade with us may have more significance to our agriculture than indicated by what they take directly.

3. Under the existing conditions, the United States must think in terms of curtailed foreign outlets for our agricultural products, which have been important factors in foreign trade; but it must weigh carefully any new proposal which might still further narrow export markets.

The Department of Agriculture has pointed out the possibility and desirability of adjustments in crop production within and between regions which, although still in need of study, may help to solve the problems of reduced foreign markets. In several regions, such adjustments would include the use of submarginal crop lands for timber growing and the development of industries, such as pulp and paper manufacture, which will furnish markets for the products. In other regions they would involve using for range and livestock, lands now devoted to wheat.

FOREIGN PULPWOOD SUPPLIES NOT UNLIMITED

4. A comparatively small change in either American or world markets might make the United States a competitive buyer for limited supplies of foreign pulp and paper instead of a competitive market for ample world production as at present.

Except during the recent depression, American paper consumption has increased rapidly and without a break, and that for the rest of the world more slowly, for more than a century. Many considerations indicate that the saturation point has not been reached.

Of the five countries which offer any large possibilities of supplying world markets, Canada is cutting far in ex-

cess of annual growth and operations are becoming more remote and costly. Newfoundland is also cutting in excess of annual growth and probably cannot increase her production much more. Russia is rapidly dissipating its easily accessible timber, and although exporting pulpwood under pressure, will probably require its own pulp and paper output for many decades. Although forest management in Sweden and Finland is on or approaches a sustained yield basis, the chief possibility for further increase in exports from these two countries is through diversion of a larger proportion of forest products from lumber or fuel wood to pulp and paper.

5. Higher prices for foreign pulp would place paper mills dependent upon imported pulp at a disadvantage as compared to domestic self-contained mills since their ability to compete depends upon a stable supply of low-cost raw material.

Pulp and Paper Industry

6. While the American pulp and paper industry may, and presumably will, face severe competition in the immediate future, there seems to be no inherent reason why, with efficient management, and proper forestry it cannot compete favorably in the long run with foreign industry not only in the production of pulpwood but also in quality and price of the manufactured product.

7. There are indications that the American pulp and paper industry, especially in the South and the Pacific Northwest, will probably greatly enlarge its plant capacity in the next decade or two, regardless of Government aid or encouragement. It would, therefore, seem to be wise public policy to develop at once a far-sighted program of forestry and land use to supply such additional pulpwood as this development would require, to prevent the further wrecking of our forests and to guide this expansion of industry.

Forest Conservation

8. Definite measures to enlarge domestic production of pulpwood, pulp, and paper would stimulate forest conservation in the broadest and most inclusive sense of the word and might also benefit agriculture.

9. Neither largely increased productivity of American forests nor a greatly enlarged pulp and paper industry can be developed over night. Both, and particularly the former, would require careful planning and years of effort for consummation.

10. Public forestry, of which pulpwood production is an integral part, undoubtedly offers one of the best opportunities for large-scale relief of unemployment over long periods of years and can be effectively combined with subsistence homesteading and other forms of stable community development.

RECOMMENDED POLICY

The many complications of international trade, agricultural adjustment and forestry, which are involved in the pulp and paper situation, need continuous study—but it is essential to formulate an objective for national planning on the basis of present knowledge.

Present pulpwood, pulp and paper imports enable foreign customers to purchase agricultural and industrial exports from the United States, and curtailment of these imports might tend to reduce exports and increase unemployment in exporting industries.

Nevertheless, in view of the facts that expansion in pulpwood, pulp and paper production, would offset in part, at least, the losses which agriculture and other industry might suffer;

That the United States might be found unprepared should the existing competitive situation in world pulp and paper markets be reversed;

That the public interest in the productive use of forest land should be protected by guiding along sound lines the probably inevitable expansion of the American pulp and paper industry;

That the fullest possible advantage should be taken of pulpwood production to advance the national forestry movement to which the administration and the country are committed;

That public forestry, which is likely to be an expanding and perhaps dominant element in the national forestry movement, and which will include pulpwood production, has proven one of the best available means for relieving both rural and urban unemployment; and

That the forestry program of which pulpwood production is an essential phase, can make a major contribution to land use, assist in the stabilization of communities and promote social and economic security;

The wise course for national policy seems to be:

To go ahead with a forestry program which would restore and maintain the productivity of the timber lands of the United States so as to place us in position to meet future requirements as may become necessary or desirable;

To give every public countenance and encouragement short of subsidy, tariffs, or other direct aid, to the development of the American pulp and paper industry; and

To place no obstacles in the way of the replacement of existing imports by the domestic industry in open competition.

Boston Paper Industry Happenings

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., August 5, 1935.—The liquidating committee of the Code in Region No. 1 is functioning and hopes by the middle of the month to have something concrete to offer.

Morris B. Jorde, secretary and sales manager of the Dunleavy Company, has returned from a business trip to Virginia, Maryland, Pennsylvania and New York.

William N. Stetson, Jr., president of Storrs & Bement Company, left Thursday for a vacation at his old home, Yarmouth, Mass., where he expects to be the greater part of August.

Fred A. Schneider, manager of the Boston office of Chas. W. Williams & Co., has gone for a business trip in New England and New York.

Gordon E. Emerson, treasurer of E. Butterworth & Co., Inc., accompanied by Mrs. Emerson, has returned from a vacation at Rockport, Mass. Their son, Everett, has just been discharged from the Massachusetts General Hospital, following an operation.

Pehr Sparre, of Johenson, Wales & Sparre, wood pulp agents of New York, called on the trade last week.

Albemarle-Chesapeake Starts Redemption

[FROM OUR REGULAR CORRESPONDENT]

RICHMOND, Va., August 5, 1935—The board of directors of the Albemarle-Chesapeake Company, Inc., with principal offices at West Point, has called for redemption on October 1 all of its issued and outstanding preferred stock, consisting of 5,000 shares of the aggregate par value of $500,000, H. W. Ellerson, president, announced last week.

The place fixed for redemption is the trust department of the First and Merchants National Bank of Richmond.

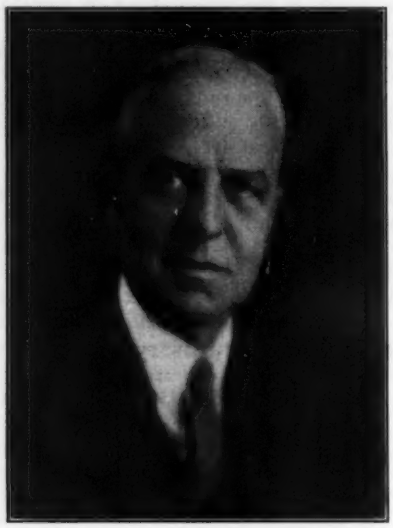
The redemption price to be paid is $105 per share plus dividends accrued thereon to October 1, 1935.

Obituary

B. W. Bennett

B. W. Bennett, president of the Dilts Machine Works, Inc. at Fulton, N. Y., died suddenly early Wednesday morning July 31st. His passing was a distinct shock to his many friends and business associates as he had apparently been enjoying excellent health and had spent the day previous at his office as usual.

Mr. Bennett had been long identified with the paper industry having purchased a half interest in the Dilts Machine Works, Inc. in 1931. He was active in the affairs of that company up to the day of his death and in 1931 following the death of Frank B. Dilts had been president of the Dilts Company. In addition to his active interest in the manufacture of paper mill equipment in the Dilts



B. W. Bennett

Machine Works, Inc. he was also identified with the manufacture of paper. From 1909 to 1917 he was general manager of the Volney Paper Company and the Arrowhead Mills, Inc. of Fulton, the Volney mill having been one of the first mills in the country to make high quality kraft papers. During the war Mr. Dilts was captain in the Ordnance Department and Mr. Bennett assumed in addition to his paper mill activities the management of the Dilts Machine Works, Inc. and later in 1919 he took over the management of the Draycott Mills, Inc. at Skaneateles Falls, N. Y. manufacturers of roofing felt in which capacity he served until illness forced him to resign in 1925. Since 1925 Mr. Bennett has devoted all of his time to the active management of the Dilts Machine Works, Inc.

Mr. Bennett was a member of Hiram Lodge No. 144 F. & A. M. and was also affiliated with the Rotary Club, the Pleasant Point Club and a member of the Oswego Country Club.

Mr. Bennett was born July 13, 1872. Besides his widow, Mrs. Lucy Dilts Bennett, he is survived by a brother Wm. Gage Bennett of New York City and two sons Winton J. Bennett and Joseph D. Bennett both of whom are active in the Dilts Company.

Dr. Arthur D. Little

Boston, Mass., August 5, 1935.—Dr. Arthur Dehon Little, 71, one of the nation's foremost industrial chemists, internationally known for his contributions to chemistry and chemical engineering and the recipient of every honor open to scientists in that field, died suddenly Thursday at Rock Inn, Northeast Harbor, Me., where he was passing his vacation. He was the founder of the Cambridge, Mass., testing laboratory of Arthur D. Little, Inc.

Dr. Little, who was awarded the Perkin medal in 1931 as the "American chemist who has distinguished himself in the field of applied chemistry," made a specialty of the chemistry of papermaking, cellulose, fibers, gas and petroleum. His greatest achievement, according to many scientists, was the fact that he was largely responsible for the establishment of chemistry as one of the most important sciences of this age. Besides the Perkin medal, he was the only American chemist ever to be elected president of the British Society of Chemical Industry. He had also served as president of the two other largest chemical societies in the world, the American Chemical Society and the Institute of Chemical Engineers.

Dr. Little was born in Boston, December 15, 1863, a son of Thomas J. and Amelia (Hixon) Little. He attended the public schools here. The gift of a dime when he was about 11 years old started him on his career. A friend to whom he showed it, persuaded him to buy glass tubing and sulphuric acid, promising some "very interesting" results. The boys made some hydrogen gas, lit it, and blew their apparatus to bits. Fortunately, neither was injured. From that time, Arthur Little could see himself as nothing but a chemist. He went to the Berkeley School in New York City and afterwards to the Massachusetts Institute of Technology, from which he was graduated in the Class of 1885.

Beginning his professional work at the Richmond Paper Company, he was clerk and chemist for $2 a day. An engineer and an inventor at the mill had a fight and left, so that Dr. Little was made superintendent. After two years, his salary was $2200 a year. He gave up this work however, and opened a laboratory in Boston in partnership with R. B. Griffin to engage in the general commercial practice of chemistry. Mr. Griffin, however, was killed by an accident in 1893, and for seven years afterwards Dr. Little carried on the business alone, forming a new partnership with the late Dr. William H. Walker in 1900, which continued until 1909, when the business was incorporated. In 1917, the laboratories were removed to their present location in Cambridge. The company has one of the largest private laboratories in the country.

Among Dr. Little's services was the founding of the School of Chemical Engineering at M. I. T. He was a life member of the corporation of that institution and a former president of the Alumni Association.

During the World War Dr. Little joined the Chemical Warfare Service and the Signal Corps. He was put in charge of special researches in airplane dopes, acetone production and smoke filters, and was the inventor of the so-called "sucked-on" gas filter, which became part of the standard equipment of the United States Army.

One of his best known scientific accomplishments was one in which he interpreted his progressive spirit by refuting the tradition, "You can't make a silk purse out of a sow's ear." In response to the challenge of a friend, he set about the task. Finding a viscous liquid used by the silkworm strongly resembling glue, he extracted glue from 100 pounds of sow's ears and succeeded in producing a silk thread, ready for weaving. He wove the purse, complete with tassel, on a small hand loom.

Dr. Little had received honorary degrees from many universities and colleges, including Columbia University, Tufts College, Manchester University and the University of Pittsburgh.

In 1916, he organized the natural resources survey of Canada for the Canadian Pacific Railway. He was a Fellow of the American Academy of Arts and Sciences, the Chemical Society of England and the Institute of Fuel, London. He was also a member of the American Petroleum Institute, the Institute of Petroleum Technologists, the American Electrochemical Engineering Society and the Engineering Institute of Canada. Dr. Little was a charter member of the Technical Association of the Pulp and Paper Industry.

Among his many scientific works he had written are "The History of Papermaking," "The Fifth Estate," of which 500,000 copies were sold, and "The Handwriting on the Wall."

He was a member of the Century Club, the Bankers' Club and the Chemists' Club, all of New York, and the Union Club, The Country Club, the St. Botolph Club, the Club of Odd Volumes and the Examiner Club of Boston. His widow, the former Henrietta Rogers Anthony, whom he married in 1901, a brother, Edward H. Little, of Newtonville, and a nephew, Royal Little, of Providence, are living. His residence was at 5 Maple street, Brookline, Mass.

Mrs. George A. Whiting

APPLETON, Wis., August 5, 1935.—Announcement is made of the death of Mrs. Mae R. Whiting, widow of the late George A. Whiting, who was president of the George A. Whiting Paper Company, Menasha, Wis., and the Whiting-Plover Paper Company, Stevens Point, Wis. Mrs. Whiting was 60 years old, and died at Rochester, Minn., where she was receiving treatment at the Mayo Clinic. The body was conveyed to her home at Neenah, Wis. for burial. Her step-son is Frank B. Whiting, who succeeded his father as president of the George A. Whiting Paper Company. Her death releases a trust fund of $150,000, of which Lawrence College, Appleton, Wis., and Ripon College, Ripon, Wis., each receive $62,500, and Theda Clark Hospital, Neenah, Wis., $25,000. Mr. Whiting's estate valued at $3,465,862.14, according to the final account filed in probate court at Oshkosh, Wis.

Bert Campbell Goes To New Jersey

[FROM OUR REGULAR CORRESPONDENT]

BEAVER FALLS, N. Y., August 5, 1935—Announcement is made that Bert Campbell has severed his connection as chemist with the local plant of the Latex Fibre Company and transferred to a mill in New Jersey where he will serve in a similar capacity. He had been connected with the local mill for several months. He has already assumed his new duties.

Improved Paper Machinery Corp. Directors

At a recent meeting of the Directors of the Improved Paper Machinery Corporation, Nashua, N. H., John H. Noble of Pelham, N. Y., sales manager of this corporation was elected a director and vice-president of the corporation. At the same meeting, John P. Rich, Jr. was also elected a director and secretary.

J. P. Lewis Co. Installs Boilers

[FROM OUR REGULAR CORRESPONDENT]

BEAVER FALLS, N. Y., August 5, 1935—Two new boilers are being installed at the J. P. Lewis Company which will replace antiquated equipment. The company has been keeping many residents here steadily employed and a busy fall season is anticipated.

Paper Demand Active In Boston

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., August 5, 1935.—The demand for paper generally in the Boston market was sustained fairly well during last week. July was a good month, on the whole, in both fine and wrapping papers, considering the season.

Fine paper was quiet to fair for the week, but the demand for some time, in the aggregate, is estimated as better than that of a year ago.

The majority of dealers in wrapping paper spoke favorably in regard to the market, with expressions like "pretty good," "fairly good for the time of year," and "a fair amount of business."

One wrapping paper dealer looks for an upturn and higher prices late this month and early in September and feels that in the meantime a fair volume of business will be sustained.

The fancy paper market was good in July. One dealer reported July as the best month he had ever had.

Specialties in general were in good demand, although index cards were quiet.

The call for box board was hardly better than fair, although the call for material for shoe boxes was maintained.

Paper stock continued in a strong position with values unchanged. The market for mixed papers is particularly strong. It is felt in the trade that while the price has not advanced beyond .22½ @ .25 as yet, that it is a question of only a short time before a rather good price will develop. Old newspapers are not so strong, but are holding their own. At present, there is no active demand for this commodity.

Old kraft was in good demand, but there was "no great rush" for this grade. Bagging held its own. New domestic rags were reported to have been selling to some extent, but there was no feature either in them or in old domestic rags. Movement in foreign rags continued limited.

The processing tax situation is holding up business in cotton twine, with the trade marking time. Jute twine is fairly stable because of the rise in the raw material, due to an anticipated small crop. Sisal has advanced, but the market is unsteady, as all distributors are "loaded up" with low-priced sisal, according to a statement in the trade. Binders' twine market is a little stronger. It is felt that tying twine is on a more stable basis and an advance in fiber values is looked for.

30 Cents Initial on Eddy Paper

CHICAGO, August 5, 1935.—Eddy Paper Corporation, directors voted a dividend on the common stock last week, the first to be declared by the present company. This initial dividend of 30 cents a share is to be paid August 31 to stock of record August 20.

Stock of Eddy Paper was listed on the Chicago Stock Exchange in 1922, and intermittently throughout the last thirteen years there have been rumors that a dividend was imminent. Almost from its inception on the local exchange there was an active speculative interest in Eddy stock.

During 1930-33 the company was undergoing a complete readjustment, both in manufacturing and sales policies. Losses were shown by the company from 1929 to 1934, but last year there was a distinct reversal. Net profit for 1934 amounted to $2.03 a share on the common stock, totaling $360,648.

While definite information is not obtainable for 1935 operations, it is known that both in volume and profit margin further betterment has been recorded, which is reflected in the declaration of the dividend at this time.

MAINE WANTS NEWSPRINT INDUSTRY STABILIZED

(Continued from page 11)

nate in the fact that you are not only familiar with this subject but also that you are greatly interested in the related problems of conservation, reforestation, forest management and related subjects.

When the virgin forests of Maine had been exploited it was thought that a century must pass before new forests of equal value could be grown equally fitted for commercial lumber; and that these must be planted and cared for much the same as farm crops. This was beyond the ken of individual landowners and even of most corporations and perhaps even of the State. The National Government was not yet interested in so extensive and farsighted a program because of the vast forest resources farther west.

Now we know that there are multitudes of uses for forest products other than as commercial lumber; that by proper management the forests largely replant themselves at relatively small cost other than interest on investment, taxes, protection from fire, etc., and that entire tracts may be reharvested each 35 to 50 years or that selected trees may be cut from year to year in a regular cropping program. While there is much yet to be learned both as to forest management and as to economic possibilities we now know that the forest resources can and do annually supply needed raw materials for a number of important industries, direct employment for hundreds of thousands of our own citizens and those in other States to whom we sell and from whom we buy. In other words, timber lands, properly handled are now on the basis of a perpetual wealth-giving industry.

Development of the Pulpwood, Pulp and the Newsprint Industry

PRE-WAR DEVELOPMENTS: Until about fifty years ago the cost of newsprint to the publisher averaged perhaps $250 per ton. Then came a revolution in the manufacture of newsprint paper. During the thirty-year period beginning about 1883, the production of newsprint from woodpulp increased from scratch to 1,305,000 tons in the United States and to 350,000 tons in Canada making a total tonnage available in North America of 1,635,000 tons annually by 1913. During this same period the price declined from roughly $250 per ton to roughly $50 per ton. The forest areas must be credited therefore with furnishing the publishers of North America with a new type of newsprint fitted to their requirements at prices only 20 per cent of what they were thirty years earlier.

THE WAR AND POST WAR PERIOD: During the next fifteen years (from 1914 to 1929) consumption of newsprint in the United States increased from about 1,500,000 tons to 3,800,000 tons,—an increase substantially more than 100 per cent. Production in the United States reached its maximum in 1926 with 1,684,000 tons and production in Canada reached its maximum in 1929 with 2,729,000 tons indicating that commercial plant capacity in the United States and Canada during the period 1926-29 was about 4,400,000 tons while consumption in the United States required more than 85 per cent of this amount. The outstanding development which had taken place during this fifteen-year period was that whereas in 1913-14 newsprint mills in the United States furnished about 90 per cent of the domestic requirements, by 1929 domestic mills furnished about 1,400,000 tons and imports amounted to about 2,400,000 tons.

THE DEPRESSION PERIOD: Newsprint requirements in the United States declined from 3,794,000 tons in 1929 to 2,790,000 tons in 1932,—*a decrease in demand of more than* 1,000,000 *tons.* There was no lack of forest resources, no lack of woodsmen ready and willing to produce an adequate supply of pulpwood, no lack of plant capacity to produce the pulp and the newsprint and no lack of mill labor. New sources of newsprint were developing and imports from European countries (chiefly Sweden, Finland, Norway and Germany) became an important factor not so much from the standpoint of actual quantity of imports or tonnage as from the point of view of prices.

Analysis of the Collapse

It is important to recall in a sentence the significant monetary events following September 21, 1931, when the British pound sterling, the Canadian dollar and the currencies of the Scandinavian countries, depreciated so rapidly and so greatly in the international exchange markets. The domestic industry was thrown into panic because of the tremendous advantages accruing to Canada and the Scandinavian countries. This, on top of the quantitative decline in the American markets (amounting to more than one million tons between 1929 and 1932) brought about not only the closing of some newsprint mills, receiverships for others, and shifting from newsprint to other branches of the paper industry for others, but such a decline in prices as to bring prices substantially below cost of production. Production of newsprint in the United States declined from 1,684,000 tons in 1926 to 1,009,000 tons in 1932 and to even lower figures in 1933 and 1934. Price reductions were equally precipitous. Whereas the price had already declined from $72 per ton as an average for the years 1926-27 to $62 per ton as an average from the two years 1929-30, it now was forced down by competition to hold contracts for quantity delivery to an average of $40 per ton for the years 1933-34. If $72 in 1926 is considered an index of 100.0 and if present price should be 80 per cent of that figure to equal average wholesale price levels, then the present price should be $57.60 per ton.

In contrast to the above, the progress looking toward recovery were in the making. With the passage of the Recovery Act, the newsprint industry promptly fell in line with the President's program calling for shorter hours and higher wages resulting in a substantial increase in the cost of production per ton of paper so that while prices were declining first from $72 to $62 and then to an average of $40 costs were being restored to the previous level. Nor were labor cost increases accompanying price declines the only source of difficulty. Declining tonnage resulted in larger costs per ton. Add to this increased costs of chemicals, power, taxes and many other items and it will readily be seen how difficult the situation became. Among those who were forced to share in the sacrifice which had to be made were the owners of the timber lands, the farmers who own millions of acres in the form of woodlots and those engaged in the cutting of pulpwood and delivery of this raw material to the pulp mills.

The situation is now so critical that woodland and woodlot owners are being forced to sacrifice stumpage; farmers and woodcutters are either unemployed or receiving barely subsistence wages and newsprint mills generally are operating at a loss so great as to indicate practical collapse of the entire industry unless corrective measures are taken at the earliest possible moment. Already large numbers of mills have either closed or shifted to other branches of the paper industry. Of those remaining 40 per cent are now in the hands of receivers; the situation in Canada is equally

critical with 60 per cent of the industry in the hands of receivers.

Efforts to Deal with the Newsprint Problem 1930-1935

With decline in newspaper circulation and even more decline in the amount of advertising the publishers had need for a smaller tonnage of newsprint. It was necessary for them to curtail costs somewhat in proportion to decline in revenue. Also it was no more than natural that they should seek to hold subscribers and volume of advertising by lower rates which in turn involved lower unit costs and among other items lower prices for newsprint. Decreased demand for newsprint with unlimited supply brought price collapse.

It is the spirit of the newsprint manufacturing industry more to explain the situation than to complain that the policy pursued by publishers was other than natural when all circumstances are borne in mind. But from the point of view of the newsprint manufacturers it became necessary to attempt to protect their own industry from complete annihilation, both from the short term and long time points of view. Three very definite approaches to the subject were made from the standpoint of government relationship to the newsprint manufacturing and publishing industries.

1. When currency depreciation became a tremendous factor following September 21, 1931, when the pound sterling became depreciated, the newsprint industry immediately loked for some form of countervailing protection. This subject was extensively studied and discussed with the National Administration during the early months of 1932 and indeed for a period of approximately 18 months, but no practical results were accomplished. During the period from September 1931 to June 1933, declining prices which accompanied declining tonnages brought ruin to a very large part of the industry.

2. The second approach to the problem involved a study of the anti-dumping laws and especially a study of the problems of exchange dumping and the selling of imported newsprint below foreign costs of production. It is enough to state that no results were secured as a result of the efforts along this line.

3. With the passage of the National Recovery Act in June, 1933, and especially with the inclusion of Section 3 (e) of that Act, it was thought that the adoption of a code providing for shorter hours, higher wages, etc., would simultaneously justify action by the President based upon an investigation by the Tariff Commission looking toward either quantitative regulations governing imports or the imposition of a few which would equalize increased domestic costs. Efforts to secure results along this line from June 1933 to June 1935 were of no avail.

A New Approach to Stabilization in the Newsprint Industry

The passage of the Act providing for reciprocal trade agreements appears definitely to contemplate stabilization of industries in the United States and specifically authorizes a procedure other than the imposition of taxes, tariffs, or fees upon items on the free list, which we believe will accomplish perhaps even more than could have been accomplished under any of the other proceedings. The fact that the Government of the United States is engaged at the present time in carrying forward negotiations looking to a trade agreement with the Dominion of Canada and the fact that Canada is overwhelmingly the principal source of supply of imported newsprint prompts the presentation of suggestions which we believe sound from both the short time and the long time points of view, also from the standpoint of conservation, reforestation and sound business management of forests and eminently fair to the owners of woodlands, the workers in the forest, newsprint mill operators and labor employed, the multitude of industries and labor indirectly affected by the newsprint industry and finally the publishers who are the immediate purchasers of the newsprint produced.

Furthermore, it is our judgment that the proposals which we herewith submit are in harmony with the general program of the National Administration looking to reemployment of labor, the maintenance of relatively short hours and high wages, proper compensation to farmers and other workers in the woodland areas and a restoration of prices and values consistent with the general restoration of prices and values in agriculture and industry in general.

Specifically our attention has been drawn to the fact that in trade agreements already negotiated the policy of the Administration has been to bind or freeze items on the free list. This was true in the case of important items in the Haitian, Brazilian, Belgian and Swedish Agreements among others which have come to our attention. We very definitely oppose the application of this same principle in the case of newsprint from Canada (with generalization of this policy to other countries supplying newsprint to the American market) unless at the same time a quantitative restriction is imposed upon the tonnage of newsprint assured a free market in the United States under this provision. More definitely our proposal is that if it is the intention of the Administration to bind newsprint on the free list then this shall apply to a definite tonnage or a definite percentage of the requirements of the American market. And since the general policy being followed by the Government is to extend the agreements to other countries, we urge that the same quantitative control shall apply to the minor foreign contributors to our market.

Extent of Domestic Share in Any Quantitative Regulation

From the standpoint of Maine (and we believe we speak of the sentiment of the people living in all parts of the United States where forest products are an important feature in the economic life of the communities) we believe that *the domestic market should be preserved for the producers of the United States,* whether these be farmers, other landowners, labor, or industries established to utilize the raw materials and labor available. An examination of reports of the National Government indicates (a) that there is available in the United States an adequate supply of forest products to provide for the pulp and paper industry of the United States for an indefinite period of time, and (b) that there are available in the United States a sufficient number of laborers on the farms, in the woodland areas and available for factories to convert the raw materials into pulp and paper products to completely supply the requirements of the United States. While this might be pointed to as an ultimate ideal to be looked forward to, we realize it would not be consistent with the present general policy of the National Administration and we do not at this time press this point of view. We rather here stress the importance of stabilization of the industry.

From the point of view of stabilization, it is our belief that not only should quantitative regulations be applied if newsprint is bound on the free list, but that this should be in the form of quotas applied not only to Canada but to other areas which contribute a small percentage of the American requirements, but it is our further judgment that these quotas should be so liberal to the domestic producers that they would assure *complete utilization of American newsprint plants* allocating to Canada and other foreign countries quotas to make up the deficiencies.

We are quite aware of the fact that this would give to the American plants a larger percentage of the American market than they now are able to command since many domestic plants are running very short of complete capac-

ity. If, therefore, it appears that this would be in conflict with the general policy adopted by the National Administration in that it would somewhat increase the share to be contributed by domestic enterprises and somewhat curtail the share to be contributed by Canada and other foreign countries we desire to present for your consideration under these circumstances the application of quantitative regulations and quotas based upon *recent actual experience* adopting as a representative period the last three or five or ten years. If this policy were adopted then as the publishers in the United States require increasing tonnages (as they again approach the volume of paper used during the '27-8-9 period) the domestic mills would share in the expansion and a relatively larger percentage of plant capacity would be utilized on a percentage basis both in the United States, Canada and foreign countries. This, we believe, would be the absolute minimum.

General Conclusion

Summarizing the situation very briefly, we particularly wish to stress at this time the absolute necessity for quantitative regulations in the Canadian Trade Agreement, based upon quotas, if the Administration has in mind the binding of newsprint on the free list. Our natural first preference would be to very greatly increase from year to year the proportion which domestic plants would contribute until the United States might be approximately self-supporting in this vast industry. If this is not practical we present as a second alternative that quotas be established which will assure full plant operation to domestic newsprint mills allocating any balance required from foreign countries to Canada and the other countries. If this in turn is going beyond what the Administration is willing to do, then we submit that the very least that should be considered would be the application of quantitative regulations in the form of quotas granted to domestic mills, Canadian mills and other foreign mills, quotas based upon recent representative experience, that is to say, based upon the last three or five or ten-year period.

The above memorandum deals exclusively with the newsprint industry. We are well aware of the very close relationship between the pulpwood industry, the pulp industry and the newsprint industry, all three of which commodities are on the free list. We are quite aware of the fact that in the trade agreement with Sweden various types of chemical pulp were bound on the free list. We desire here to state that we believe that if it is the intention of the Administration to bind other forms of pulp and/or pulpwood on the free list, consideration should be given to a plan to prescribe quantitative regulations similar to those discussed above in connection with the newsprint industry. We realize that this would involve the opening for further study of the trade agreement entered into with Sweden which bound certain types of chemical pulp on the free list without prescribing any quantitative limitations, but we feel that the matter should be presented to you in this connection at this time because of its indirect relationship to the newsprint industry.

Alternative Programs

We are well aware that there are alternatives to which those interested in the woodlands and woodlots and the pulp and newsprint industries (including the hundreds of thousands of farmers, workmen and residents of forest products communities) may turn. Perhaps the three leading alternatives are:

1. To salvage stumpage by exploiting timber at whatever present cash returns being forced to forget for the moment all that of conservation, reforestation, sound forest management, etc., and to cut wages to farmers, woodsmen and all other labor to a subsistence basis, in order to meet the imports in competition. Capital is already serving without pay but could be largely used up by allowing depreciation and obsolescence to take place. This would mean complete abandonment of all details of the hours and wages codes recently entered into. By following this alternative it would be possible to hold approximately the present proportion of the domestic market, at least for another year or two.

2. To join with other agricultural labor and industrial groups in a battle to preserve the domestic industry by driving for the adoption of an extreme policy of reserving the American market for American farmers, labor and industry. This would look forward to a gradual expansion of domestic production to a point approaching self-sufficiency in pulpwood, wood pulp and newsprint calling for better prices for wood and a larger market, and the employment of scores of thousands of workmen now unemployed. Buy American would be a feature of such an alternative.

3. A third alternative is the continued shift of newsprint mills into other branches of the paper industry. Labor, pulpwood, power plants, buildings for producing pulp, as well as much of the other equipment and the business and financial organization all adapt themselves readily to such a shift.

There were in operation in 1910, or built in the period between 1910 and 1930, a total of 98 mills designed primarily for newsprint production. Today only 18 of these mills are wholly engaged in the making of newsprint paper. Twenty-seven devote but part of their facilities to newsprint. Thirty-four mills have shifted completely to other grades. Thirteen mills were idle in 1934 ad six have been destroyed or dismantled.

But the whole paper industry is already over expanded largely because of the shifts already made from newsprint. Other branches of the paper industry operated in 1934 from about 50 per cent to 70 per cent of capacity. Further diversion from the newsprint division would undoubtedly endanger the wages of the nearly 100,000 workmen employed in the related fields. Something approaching complete collapse of the whole paper industry is in prospect if the newsprint mills which produce from 20 per cent to 25 per cent of the total tonnage of paper continue to shift to the so-called protected fields.

But the further closing down or shifting of the remaining newsprint mills would probably cause the greatest injury in the long run to the publishing industry. While 90 per cent of domestic requirements for newsprint was supplied by domestic mills in 1910-15, that proportion is now down to about 33⅓ per cent. The publishers will soon be absolutely at the mercy of foreign producers. The number of foreign producers who now supply this market does not exceed 50.

The people of the United States have often been exploited by foreign groups who have gotten a monopoly or a near monopoly of a commodity greatly needed in large quantities in this country and not produced here in adequate quantities. We need only refer to a few of common knowledge to illustrate the dangers. Past and even present prices of tin are known to us all. Exploitative camphor prices may be referred to until the advent of synthetic camphor. In the middle twenties the price of rubber reached ten times the prices of today and the prices today are four times the low point of the depression, since the new foreign agreement. The price of coffee was forced to very high levels for a series of years until great expansion took place in other countries bringing about as unfortunately low prices as they previously were unneces-

sarily high. Sugar is frequently referred to. Domestic production was limited. Prices at the close of the War went up to four or five times the satisfactory level of today. Our people paid excess billions of dollars until tremendous expansion under our own flag in Hawaii, Puerto Rico and the Philippines, as well as on the mainland, brought about first price collapse and now stabilization through quotas.

Many other illustrations could be cited, but it is believed these call attention to a sufficient number of different types of cases to illustrate the point. While a few American newspaper publishers have their own supplies at home or abroad, the overwhelming majority are entirely dependent upon the market for their newsprint requirements. Most of them have not forgotten the prices paid—from $100 to $150 a ton—at the close of the War. Most contracts today are at prices only 25 per cent to 33⅓ per cent of prices paid at that tme.

The publishers in the United States might easily find themselves in an unenviable position if something is not done at a very early date to preserve the remnant of the domestic industry. It is not too soon to move in the direction of a restoration of the domestic industry to a position where it can supply at least 50 per cent of domestic requirements.

Indianapolis Demand Is Slower

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., August 5, 1935—While this area sweltered in the worst heat wave of the summer last week, business slowed down considerably. Jobbers and manufacturers here say most of the decline is purely attributable to weather conditions and the vacation season and are predicting a smart rebound toward the end of the present month.

The fine paper market here did not escape the general trend. There are sales in progress but the tendency is to wait until a little later in the season. School units of the state have begun advertising in some instances for supplies for the coming year. Bids on these paper supplies will establish to some extent just how far prices have been affected by the abolition of the NRA. Inquiries have been received from publishers and printers on some fair amounts, but buying is being held up until the last minute. The same condition is true in the book and cover market. Prices on all fine papers seem to be holding firm in spite of the scramble for such business as there is.

In the common paper field there has been no improvement. The demand seems to be holding up reasonably well in view of seasonal influences. Jobbers and manufacturers are fighting for business. The demand for bags is average.

Demand for all transparent, waxed and cellophane papers continues about the same it has been. Makers of bread wrappers have shown little decrease in their buying. Demand for cellophanes from the confectionery trade has slumped, but this always is to be expected in the summer and the slump has not been as drastic as it sometimes is.

The container field is somewhat spotted. Demand from the ice cream trade is heavy, but other demand has dropped off. Box makers report some demand from textiles, with every indication of an appreciable improvement toward the end of the present month. Inquiries are being received from a wide number of sources.

Summer specialties and the building paper demand is the bright spot now. Both are moving nicely and indications in the building paper field are that fall will see more volume than any similar season since 1934.

J. T. Gamble To Manage Savannah Plant

[FROM OUR REGULAR CORRESPONDENT]

HUDSON FALLS, N. Y., August 5, 1935—Announcement is made that John T. Gamble, general manager of the Union Bag and Paper Company, will act in a similar capacity for the pulp and paper sections of the huge plant now under construction by the company in Georgia. Whether or not he will move South or direct operations from this village was not stated. The operation of the Georgia plant is to call for construction of a special paste plant where the firm will manufacture that product, according to T. M. Avery. Plans call for the distribution of the paste through concealed pipes under pressure to the bag machines. It was also stated that in about six or eight months everything will be ready for installation of equipment in the new bag factory.

Officials here contend that the most difficult problem in starting a new plant is to obtain skilled help. It is understood that plans call for transferring a number of trained workers to the South for instruction purposes and several weeks are generally required to produce efficient operators.

A group of men are now busy removing the debris from the site of the old No. 5 mill of the corporation in this village. The mill had not been used for several years and dynamite was used last fall to demolish it. Whether or not the site will be used again could not be learned.

TAPPI Notes

G. S. Brazeau formerly Chicago sales manager for the Weyerhaeuser Timber Company Pulp Division, has been appointed manager of the new Everett, Washington, mill of that company.

Gerald G. Hill formerly of Bloomer Bros., Newark, N. Y. is now with the Champion Fibre Company, Canton, N. C.

Andreas Christensen formerly of the Grays Harbor Pulp and Paper Company, Hoquiam, Wash. is now with the British Columbia Pulp and Paper Company, Port Alice, B. C.

Norman Clark recently with Louis De Jonge Paper Company is now with the Continental Color Company, Cleveland, Ohio.

R. I. Wynne-Roberts recently with the International Paper Company, Glens Falls, N. Y. is now with the Norton Company, Worcester, Mass.

Joseph Rossman formerly patent examiner U. S. Patent Office, Washington, D. C. is now patent attorney for the Marathon Paper Mills, Rothschild, Wis.

Arnold McAneny a recent graduate of the New York State College of Forestry, is now with Bradner Smith & Co., paper merchants, Chicago, Ill.

Lawrence High Duty Multi Stage Pumps

The Lawrence Machine and Pump Corporation, 371 Market street, Lawrence, Mass., announces the issue of their Bulletin 204 describing the "Lawrence" High Duty Multi Stage Pumps.

These pumps are especially adapted for high pressure service as for water works, boiler feed and industrial uses.

The bulletin describes fully the construction of this type of pump and includes a cross-section drawing and two cuts.

This bulletin should be of interest to engineers and plant superintendents concerned with pumping problems and pump maintenance.

Weekly Production Ratio Report

Reports to the American Paper and Pulp Association show the following Over-All Production Ratios for the designated periods.

	Reporting Mills		Total Production Ratios
	Number	Capacity	
September, 1934	292–299	.....	59.4%
October, 1934	297–394	.....	64.7%
November, 1934	385–399	.....	61.7%
December, 1934 (a)	396–404	.....	62.1%
January, 1935	397–411	.....	65.8%
February, 1935	407–409	.....	70.0%
March, 1935	406–408	.....	70.5%
April, 1935	405–407	.....	70.0%
May, 1935	375–407	.....	69.4%
June, 1935	355–374	.....	72.3%
*Week ending July 6, 1935 (b)	353	122,528	58.6%
*Week ending July 13, 1935	351	146,099	69.1%
*Week ending July 20, 1935	347	144,534	71.9%
*Week ending July 27, 1935	265	112,076	69.5%

Statistics showing the number of mills reporting by ratio groups are given below:

	Number of Mills Reporting			
	Week ending			
Ratio Limits	July 6, 1935	July 13, 1935	July 20, 1935	July 27, 1935
0% to 50%	186	123	114	81
51% to 100%	167	228	233	184

* Subject to revision.

According to reports from the National Paperboard Association, per cents of operation, based on "Inch-Hours" were as follows:

	September, 1934	62 per cent
	October, 1934	63 per cent
	November, 1934	56 per cent
(a)	December, 1934	53 per cent
	January, 1935	61 per cent
	February, 1935	67 per cent
	March, 1935	67 per cent
	April, 1935	61 per cent
	May, 1935	61 per cent
	June 8, 1935	61 per cent
	June 15, 1935	65 per cent
	June 22, 1935	65 per cent
	June 29, 1935	69 per cent
	July 6, 1935	39 per cent
	July 13, 1935	63 per cent
	July 20, 1935	68 per cent
	July 27, 1935	68 per cent

(a) Capacity and percentage data exclude December 25, 1934.
(b) Capacity and percentage data exclude July 4, 1935.

Revised statistics covering delinquent mill returns will be shown in later reports.

Shenandoah Pulp Co. Shuts Down

HARPERS FERRY, W. Va., August 5, 1935—The Shenandoah Pulp Company shut down last Saturday.

The company pointed to the low price of pulp and the condition of the mill's machinery, which has been used for 50 years, as factors in deciding to close the plant.

The operations were purchased several years ago by the Insull interests, which also acquired the light plant, including the water power on both rivers flowing through Harpers Ferry, and a number of other properties.

Both the pulp mill and light plant are under the control of the Chase National Bank of New York.

To Make Economizers Under Bell Patent

The Foster Wheeler Corporation announces that it has recently granted a license to the Green Fuel Economizer Company, Inc., of Beacon, N. Y., to manufacture an extended surface economizer under Bell patent 1,565,305, which is the property of the Foster Wheeler Corporation.

E. Green & Son, Limited, of Wakefield, England, the associated company of the Green Fuel Economizer Company, Inc., acquired the European rights to the Foster Economizer several years ago.

Philadelphia Paper Industry Active

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., August 5, 1935—Midsummer finds business activity in both division of the paper industry—fine and coarse—well sustained although not as healthy as it had been during June. However, the industry is looking forward to one of the best fall seasons in several years. In talking with one of the leading distributors here today he expressed the thought that the industry is approaching the stage where the natural recuperative forces would provide a real sustaining influence to business activity, provided sound policies are followed.

In the waste paper trade, it is reported that the position of mixed papers is a little stronger; they are being well bought up and the resultant scarcity will necessarily bring about a price change which has been anticipated for some weeks past.

Garrett-Buchanan Company were the successful bidders on the following order for bond paper for the Board of Education: 5 cases, 28x34—2500 pounds, 40 cases 22x34—20,000 pounds, 10 cases, 17x28—5,000 pounds, 10 cases, 19x24—5,000 pounds and 20 cases, 17x22—10,000 pounds.

The Philadelphia Paper and Cordage Association, Inc., will hold its first regular meeting on September 20 at Adelphia Hotel. Secretary Vincent A. Dirvin of Paper Manufacturers, Inc., states that they are bending every effort to increase the membership and an intensive campaign will be launched in this direction.

Morgan S. Thomas, president of Garrett-Buchanan Company, accompanied by Mrs. Thomas and Miss Margarette Keller, daughter of Edward A. Keller, first vice-president and general manager of Garrett-Buchanan Company, sailed on Wednesday on the Steamship *Washington* for Europe. They will be gone five weeks and will visit Scotland, London, Ireland and Paris.

Harry S. Platt, president of the Paper and Cordage Association, Inc., with his family, will spend a few weeks at Ocean City, N. J.

William L. Simmons, of John Simmons' Sons, waste paper dealers, 28 South Marshall street, is vacationing at Ocean Grove, N. J.

Large Pulp Shipment Expected at Albany

[FROM OUR REGULAR CORRESPONDENT]

ALBANY, N. Y., August 5, 1935—Several consignments of foreign pulp arrived here this week. A Norwegian vessel carrying several thousand tons arrived early in the week and was followed by a freighter from Hernosand, Sweden, with 15,000 bales. Indications are that pulp shipments received at the port will exceed the mark of last year.

J. L. Stille To Be General Sales Manager

The Continental Paper and Bag Corporation, 122 East 42nd street, New York, announces that effective as of August 1, the sales supervision of the Grocers and Odd Bag Division, is as follows: J. L. Stille, general sales manager; J. M. Hartmann, sales manager; E. D. Foster, assistant sales manager.

Record Newsprint Run

Great Lakes Paper Company, Ltd., of Fort Williams, Ont., announces that its record run of newsprint production made on June 7 has now been surpassed. On July 27 there was produced on its 304-inch machine, 200.5075 tons of standard news. The former record was 194.4 tons.

1935 LOCKWOOD'S DIRECTORY of the PAPER & ALLIED TRADES Edition

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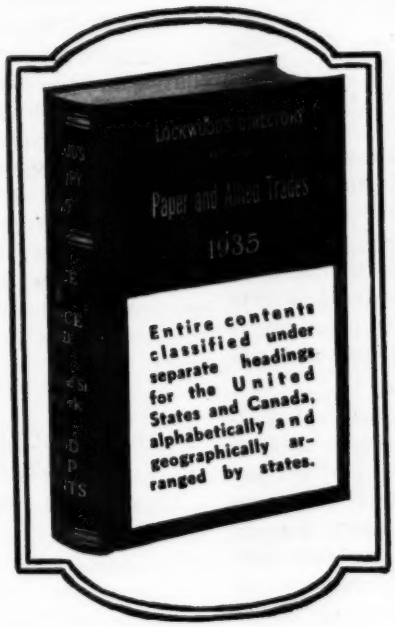
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Price, Per Copy, 10 Cents
United States, Per Annum, $4.00
Canada, including tax, $7.50; Foreign Countries in Postal Union, $6.00

Member Audit Bureau of Circulations

Vol. CI New York, August 8, 1935 No. 6

PAPER EXPORTS SHOW DECLINE

Exports of paper and paper products from the United States during May again registered a slight decline compared with those of the preceding month, although the aggregate value was 10 per cent above that for May 1934, according to the Forest Products Division of the Department of Commerce. Nearly all items show a rise in volume over the corresponding month last year, with the largest gains occurring in shipments of newsprint, book papers, over-issue news, tissues and crepes, writings, and wrappings. Exports of boxboards were less by 45 per cent and paper bags by 9 per cent. Exports of paper towels and napkins, fiber insulating boards, envelopes, and cash register rolls also declined.

Compared with the April exports, shipments of over-issue news, greaseproof and waterproof papers, surface-coated papers, and tissues rose, while exports of writings declined 5 per cent, book papers 26 per cent, and wrapping papers, exclusive of greaseproof, 1 per cent. Exports in the board group, with the exception of bristols, were also generally lower than in April, notwithstanding that shipments of miscellaneous boards were up about 50 per cent compared with last year. Total shipments of paper and paper products for the month of May were valued at $1,604,184 as against $1,692,976 during April and $1,456,078 during May 1934.

Exports of paper base stocks from the United States during May, unlike paper continue to show an upward trend, the month's shipments being valued at $835,471 as against $798,774 during April and $496,955 during May of last year. These gains were almost entirely due to heavy increases in shipments of sulphite pulp, which have risen from 5,483 tons last year to 11,518 tons during April and 12,623 tons during May of the current year. Exports of soda and other wood pulp also show substantial increases. Shipments of rags and other waste for paper making, however, were 24 per cent under the April shipments and 53 per cent under those of last year. Exports of pulpwood compared with the same months show losses of 36 per cent and 44 per cent respectively.

Imports of wood pulp and other paper base stocks into the United States show a sharp rise after their slump of the previous month. Receipts of all classes, with the exception of rags, was considerably higher than in either April or May of last year. Especially noteworthy were the increases in receipts of groundwood, unbleached sulphite, and kraft pulp.

Imports of rags dropped off about 10 per cent compared with April but were 70 per cent above the May 1934 consignments. Imports of other waste stocks were 65 per cent and 51 per cent respectively above those of the other two months mentioned, while imports of pulpwood show increases of 40 per cent and 59 per cent. Total imports during April were valued at $6,686,639, including pulpwood $378,726, wood pulp $5,982,859, and rags and other waste $325,054. The preceding month's receipts reached an aggregate value of $3,997,509 and May 1934 receipts $5,323,250.

Imports of paper and paper products into the United States were 22 per cent higher in value during May than during the preceding month and 12 per cent above May 1934. While this increase was largely due to a rise in receipts of newsprint, which represents 85 to 90 per cent of our paper imports, our larger shipments to this country of boards and other printing papers also contributed. Imports of kraft wrappings, writings, surface-coated, and cigarette papers, while exceeding last year's receipts were somewhat lower than in April. Total receipts of paper and paper manufactures were valued at $8,925,912, as against $7,333,474 for April and $7,935,237 during May, 1934.

OPEN HOUSE FOR TAPPI AT FRANKLIN INSTITUTE PAPER EXHIBIT

Visitors to the Fall Meeting of the Technical Association of the Pulp and Paper Industry, September 18-21, 1935, should make it a point to inspect the paper-making exhibit at the Benjamin Franklin Memorial Museum, Parkway and Twentieth street, Philadelphia.

Ever since its beginnings, Philadelphia has been connected with the paper trade. Eight years after its foundation, in 1690, William Rittenhouse set up the first paper mill in America, on what came to be known as "Paper Mill Run," a creek emptying into the Wissahickon. The "Wissahickon Paper" became celebrated throughout the country for its whiteness and firm qualities. Towards the middle of the eighteenth century a rival mill was set up by Samuel Pond. Its product also was of the highest quality. Yet this mill never could successfully compete with the securely established Rittenhouse one. It often changed hands. Since 1850 it was known as the Megaree Paper Mill. And finally, in 1884, it was torn down.

Owing to this early interest in paper-making, as well as to the fact that Benjamin Franklin of Philadelphia was the most famous printer, author, and publisher of Colonial

times, it is very fitting for a Philadelphia museum to pay especial attention to the paper trade.

In its Graphic Arts section the Museum exhibits a Colonial print shop, for the furnishing of which many authentic relics have been assembled. There is an old printing press which actually belonged to Franklin's printing company from 1780 onward. The exhibit contains another aged press, a wooden printing press imported from Germany by the Ephrata Society in 1745. It is practically certain that Franklin himself worked on this press, more than once. For he was in close touch with the mystical brotherhood and, with a younger Rittenhouse, often visited at its cloister, the "Lager der Einsamen" (encampment of the solitary ones) on the Cocalico River, Lancaster Township. On this same press was printed, in five languages, the Declaration of Independence, from translations made by one of the learned members. This press is now the property of the Pennsylvania Historical Society, which kindly placed it here on loan.

The whole process of printing in Colonial times is made clear in this display. Here one can see the vat and mould of the first handmade papers, the type cabinet and type trimming table (which Franklin brought from France in 1784 for his grandson, whom he set up in the type founding business), an ink stone long used by Franklin, a small wooden press he used in bookbinding, as well as a number of printed sheets bearing his mark.

In contrast, there is a modern section, demonstrating how this same work of papermaking, printing, and even hand-binding, is done with the help of modern equipment. The only scale model of a Fourdrinier paper-making machine ever built, is shown here. It will make paper 8½ inches wide, in rolls. Typesetting machines can be seen actually working. Presses, from the earliest commercially successful job press, to the multicolored magazine press of today, are in operation. Different forms of printing, from woodcuts, copper or steel etchings, steel engravings, lithographic stone, are on view—as well as blocks, plates, proofs, prints, and every kind of tool used in the process.

The whole history of paper making and usage in the United States is shown in detail. Paper products, methods of paper testing (both mechanical and microscopical), pulps of different origin, papers for different uses—everything is shown. It is an exhibition which nobody connected with the paper industry, or interested in it, can afford to miss.

The visit to the Franklin Institute will be made on Wednesday, September 18.

$4,000,000 R. F. C. Loan for Paper Mill

WASHINGTON, D. C., August 7, 1935—The Reconstruction Finance Corporation has made a loan of $4,000,000 to the Crossett Lumber Company, of Crossett, Ark., for the construction of a 100-ton kraft paper mill to be completed in one year and to use second growth pine. This is the first loan made by the Corporation involving the construction of a paper or pulp mill although this has been agitated for many months.

Paper Trade Journal Too Technical?

New York, N. Y., August 1, 1935.

Editor, THE PAPER TRADE JOURNAL:

Having subscribed to the PAPER TRADE JOURNAL for many years, it is with great pleasure that we take this opportunity of informing you how valuable your publication has been to everyone in this organization in building a closer relationship with the mills and acquiring an understanding of the paper-maker's problems. It gives a wealth of technical information that none of us would want to miss.

Another reason for writing you is that we would like to make a suggestion in regard to your publication. While we understand that the information contained in the PAPER TRADE JOURNAL is primarily intended for the paper manufacturer, we believe that a special section of it should be devoted to the interests of the paper merchant. There are so many things of interest in the field of paper merchandising that a "Merchants Section" cannot help be of value to the mills as well as to the paper distributor. A "Merchants Section" in the PAPER TRADE JOURNAL would carry news items on new merchandising policies, suggestions for new plans of cooperation with the consumer, or general developments in the paper industry that are of particular interest to the merchant.

May we suggest that you give this idea further consideration. Many trade papers such as magazines for the printing industry follow a similar policy by devoting several pages of their publications to matters of interest to the merchant and we have found this to be a decided advantage in reading such publications.

In determining the advisability of our suggestion, we believe it will be practical for you to publish this letter in the next issue, together with some editorial comment requesting an expression of opinion from paper mills and merchants throughout the country.

H. E. GOULD, President,
Aldine Paper Company

Government Paper Bids

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., August 7, 1935—The Government Printing Office received a number of bids at 5.65 cents per pound for 112,200 sheets of buff antique paper as follows; Jessup & Moore Paper Company, Barton, Duer & Koch Paper Company, and P. H. Glatfelter Company.

For 10,000 pounds of kraft wrapping paper; J. W. Butler Paper Company, 3.79 cents; Graham Paper Company, 3.875 cents; Barton, Duer & Koch Paper Company, 3.8 cents; and R. P. Andrews Paper Company, 5.03 cents.

For 400 sheets of 32 x 50 cloth lined manila paper; Reese & Reese, Inc., at $23.85 per C sheets; Mathers-Lamm Paper Company, $31.108; Whitaker Paper Company, $23.90; R. P. Andrews Paper Company, $25.00; Barton, Duer & Koch Paper Company, $25.13; and George W. Millar & Co., Inc., $25.80.

Ground Wood Cartel Now in Effect

WASHINGTON, D. C., August 5, 1935—The agreement between mechanical wood pulp producers in Norway, Sweden, and Finland to limit production amongst themselves has been ratified by the several interested groups and the cartel is now in effect, according to a recent report from Acting Commercial Attache Osborn S. Watson, Stockholm. This agreement is in line with existing agreements in other sections of the pulp and paper industries in the northern countries.

NUMBER ONE OF A SERIES OF FAMOUS PIONEERS IN CHEMICAL HISTORY

In 1791, Nicolas Leblanc won the prize of 2,400 livres offered by l'Academie des Sciences de Paris for his processs for making soda ash from salt. He never received the prize money, however. During the French Revolution, Leblanc's patents were voided and his plant wrecked by a mob. In dire poverty, in 1806, he ended his life by suicide.

WHEN Nicolas Leblanc built his soda works at St. Denis, France, nearly a century and a half ago, he established himself as the pioneer manufacturer of soda ash. Although his process was never used in the American alkali industry, it was not until 1895 that production of soda ash by the now universal ammonia-soda process exceeded production by the old Leblanc process. Mathieson, another pioneer producer of soda ash, starting operations at that same time forty years ago, has been in continuous production ever since. Mathieson Soda Ash has long been accepted by the chemical consuming industries as the standard of high, uniform quality.

The MATHIESON ALKALI WORKS (*Inc.*), 60 East 42nd St., New York, N.Y.

SODA ASH . . . CAUSTIC SODA . . . BICARBONATE OF SODA . . . LIQUID CHLORINE . . . BLEACHING POWDER . . . HTH AND HTH-15 . . .

Mathieson Chemicals

AMMONIA, ANHYDROUS AND AQUA . . . PH-PLUS (FUSED ALKALI) . . . SOLID CARBON DIOXIDE . . . CCH (INDUSTRIAL HYPOCHLORITE)

Section of the
Technical Association of the Pulp and Paper Industry
Edited by Ronald G. Macdonald, Secretary

Pulp and Paper Industry Literature Review

Abstracts of Articles and Patents Compiled by the Abstracts and Bibliography Committee of the Technical Association of the Pulp and Paper Industry, A. Papineau-Couture, John F. Ohlson, C. E. Peterson and Clarence J. West, Chairman

Copies of United States Patents can be obtained from the United States Patent Office, Washington, D. C., for 10 cents each. Send currency, not stamps.

Raw Materials

Finger Printing Wood. F. H. Yorston. Pulp Paper Can. 36:16 (Jan., 1935).—The following simple method is recommended for making records of the growth rate or of structural peculiarities of wood specimens: a transverse section is smoothed with a plane or with fine sand paper, dipped face down in a warm mixture of phenol (20 g.) (or cresol) and concentrated sulphuric acid (15 cc.) (the proportions can be varied considerably) for 10 mins. or longer at 70° to 80° C., washed thoroughly under the tap (using a soft brush to remove gummy reaction products), blotted and allowed to air dry; the sample is covered with a sheet of carbon paper, coated side up, a sheet of typewriter paper is laid over it and rubber firmly with a glass stopper or with the finger nail. —A.P.-C.

Mass Production of Paper Fibers from Banana Stalks. Charles O. Tappan. U. S. pat. 1,981,883, (Nov. 27, 1934).—Intersecting aisles or lanes are formed by field clearings in the plantation, and power drag devices are provided that can reach all points of the aisles. Each stalk is cut into lengths of about 9 feet, which are bundled, and the bundles are dragged to be loaded on railway cars and transported to storage. From storage the bundles are broken, the stalks are transferred to a conveyor in end to end relation, scrubbed, split longitudinally in two, decored, crushed to a fibrous mass, cleaned, dried and baled. —A.P.-C.

Bagasse Cellulose. D. F. J. Lynch. Repts. Assoc. Hawaiian Sugar Tech. 13th Meeting, 1934; 159-161; Facts About Sugar 30; 11-12 (1935).—Although dry bagasse contains about 55 per cent cellulose, commercial attempts to produce paper from bagasse have not been successful so far. The nitric acid process of pulping has been further improved through re-use of the acid, and by the introduction of an alloy resistant to hot dilute acid. Further study may lead to the solution of the problem. —A.P.-C.

Pulp Wood for Viscose Manufacture. II. Two Kinds of Manchurian Spruces. M. Shikata, S. Ba and K. Akagi. J. Cellulose Inst., Tokyo 10; 92-97 (1934).—Complete analyses are given of two samples of Gyorinsyo spruce (*Pie cea ajanensis*, Fisch.) and one of Sansyo spruce (*Picea Schrenkiana*, Rufr.). The alpha-cellulose contents were 33.9, 36.9 and 32.1 percent, and the alcohol-benzene extracts 1.9, 2.9 and 5.4 percent; both are inferior in alpha-cellulose content to Karafuto spruce. When cooked, Gyorinsyo spruce yields a high quality pulp (86 to 87 percent alpha- cellulose), but Sansyo spruce an inferior pulp (72 to 73 percent alpha-cellulose) unless it is after-cooked with 1 percent caustic soda solution, which increases the alpha-cellulose content of the pulp to 86 percent. Spun viscose from the pulps was of normal strength.—A.P.-C.

Pulp for Use in Rayon. I. Beech. M. Shikata and I. Tsuchiyama. Artif. Silk Staple Fibre J. Japan 1; 3-4 (1933).—Wood of *Fagus japonica*, Max., contains 0.58 percent ash, 3.80 percent alcohol-benzene extract, 45.85 percent alpha-cellulose, 4.62 percent beta-cellulose, 7.67 percent gamma-cellulose, 18.52 percent lignin, 21.25 percent pentosan, O mannan, 0.23 percent galactan, and 3.25 percent pectin. The pulp contained 0.86 to 1.89 percent ash, and 70.1 to 90.80 percent alpha-cellulose.—A.P.-C.

Value of Lauan Wood As Pulp Material. N. Migita. J. Cellulose Inst. Tokyo 9; 338-342 (1933).—White Lauan (*Pentacure contorta*) wood has a high lignin content and is low in pentosans. After digestion with caustic soda a short fiber is given which is easily disintegrated on beating for 12 min. Sheets made from it have a low tensile strength and extremely low folding endurance. —A.P.-C.

Pine Wood as the Raw Material for Paper, Board and Carton. H. Postl. Wochbl. Papierfabr. 65, No. 52:922 (Dec. 29, 1934). A short history, starting with the first appearance of pine wood in 1873 as a raw material to present day references.—J. F. O.

Concerning Pulp Wood. A. Klein. Zellstoff u. Papier 14, No. 11:433-35; No. 12:486-88 (Nov., Dec., 1934).—The annual world consumption of coniferous woods is estimated at 27,500 million cubic feet, and although the annual growth is less; better forestry methods have lessened this gap considerably. Fiber dimensions, specific gravity, moisture content and tree growth are discussed and curves plotted showing the variations. Means

of identifying the various coniferous woods are explained. Wood chips with 20 per cent moisture give 9.5 per cent less yield per digester than wood with 40 per cent moisture. Dry wood hinders the penetration of the cooking acid, but this can be aided by steaming the chips or treating with waste liquor.—J. F. O.

Recovery of Sulphur from German Raw Materials. Wochbl. Papierfabr. 65. No. 46:820 (Nov. 17, 1934).—In order to make Germany less dependent upon foreign nations for raw materials, considerable work is being done on the production of raw materials which can be recovered as by-products from domestic sources. A short description of the Thylox process for the recovery of sulphur from coke gases is given.—J. F. O.

Brazilian Plant Fibers for the Manufacture of Paper. Radamus. Wochbl Papierfabr. 65, No. 49:867-68 (Dec. 8, 1934).—The important facts regarding the various plant fibers suitable for paper manufacture are given. These fibers will make a good grade of paper, but the greatest obstacle is the difficulty in getting the fibrous material to the mill. The author sees a great future for the Brazilian paper industry when certain problems are solved.—J. F. O.

Several Methods for the Chemical Utilization of Deteriorated Wood. K. E. Neumann. Papier-Fabr. 32, No. 28:321-26 (July 15, 1934).—Possible methods for the chemical utilization of deteriorated and less valuable wood are discussed, such as, the production of building board and pressed objects, saccharification of the wood and the recovery of wood fodder, and also the hydrogenation and carbonization of wood.—J. F. O.

The Swelling of Wood By Water and Aqueous Solutions. C. G. Swalbe and W. Beiser. Papier-Fabr. 31, No. 50:655-67 (Dec. 10, 1933).—The duration and type of drying are of definite influence on the increase in volume during the swelling of saw dust in water and electrolytes. Wood that has been dried quickly does not show any difference in the degree of swelling between water and electrolytes. The speed of swelling of wood is much greater for liquid water than for water steam. The factors which influence the degree of volume increase during swelling with water and electrolytes are; the type of drying, the density, the per cent of spring wood and summer wood and the microscopical hair cracks.—J. F. O.

Process for the Recovery of Pulp from Printed Paper. Alex B. Davis, James F. Thompson and Alfred T. Gardner assignors to Lewis L. Alsted. U. S. pat. 1,975,771 (Oct. 9, 1934).—Paper that has been printed with a bleachable ink (*e.g.*, tannin inks or dye wood extracts) is pulped and treated with sulphur dioxide. The residual acidity may advantageously be neutralized, preferably with borax.—A.P.-C.

Recovery of Pulp from Printed Paper. L. L. Alsted. Brit. pat. 410,742 (Oct. 21, 1932).—The paper containing groundwood is printed with inks the pigments of which are the barium lakes of acid or direct coal-tar dyes or the iron or manganese lakes of dyes of vegetable origin, *e.g.*, logwood extracts, tannic acid, etc. The pulp may then be recovered by shredding the paper and discharging the coal-tar dye lakes with sodium hyposulphite and the vegetable lakes with sulphur dioxide or sodium sulphite, and finally neutralizing with borax.—A.P.-C.

Purification of De-Inking Wastes and Other Industrial Effluents. Sidney D. Wells and William B. Cramer assignors to Lewis L. Alsted. U. S. pat. 1,982,129 (Nov. 27, 1934).—Waste liquor from the de-inking of printed papers by means of soap is treated with an acid or an acid-reacting salt, allowed to stand several hours, the liberated fatty acids are separated, and as much clear liquid as possible separated from the sediment of flocculated fiber and ink. A suitable flotation reagent (*e.g.*, fish oil soap and cottonseed foots oil soap) is added to the ink-fiber suspension, and the fibers are separated from the ink by flotation.—A.P.-C.

Cellulose

Action of Alkaline Copper Solution on Cellulose. Y. Takamatsu. J. Cellulose Inst., Tokyo 10:221-230 (1934).—Cellulose is not disintegrated by solution of copper hydroxide in aqueous sodium hydroxide. The amount of sodium hydroxide combining with cellulose depends on the concentration, but the amount of copper hydroxide is always 0.65 to 0.50 molecule per C_6 unit; the X-ray diagram of the former is the same as that of Hess's compound-II formed in a solution also containing amine. The presence of ammonia accelerates compound formation.—A.P.-C.

Bamboo. XI. Viscosity of Bamboo Cellulose. S. Oguri. Mem. Fac. Sci. Eng. Waseda Univ. 11:92-93 (1934).—Cellulose extracted from bamboo by repeated treatments with chlorine and sodium sulphite has about the same viscosity as has cotton cellulose after similar treatment.—A.P.-C.

Dark-Field Study of Fibers. A. T. Clifford and F. K. Cameron. Ind. Eng. Chem. 26:1209-1213 (Nov., 1934).—The spacing of the striae of cellulose fibers seen with the Spierer lens is many times any dimensions of the micelle as calculated from the X-ray data. It is no longer possible to accept the measurements from Spierer micrographs as those of any unit characteristic of the material under observation. Apparently the striae observed with the Spierer lens are diffraction bands. There is as yet no satisfactory explanation of the differences in cellulose fibers of different origins, if, in fact, such differences exist.—A.P.-C.

The Structure of Cellulose. William H. Barnes. Pulp Paper Can. 35:670-675 (Dec., 1934).—An explanation of crystal analysis by means of X-rays, and of results obtained by its application to the study of the structure of cellulose.—A.P.-C.

Recent Progress in the Study of the Structure and the Reactions of Cellulose. G. Champetier. Bull Soc. Chim. [5], 1:613-635 (1934).—A.P.-C.

Lignin in Douglas Fir. A. J. Bailey, Paper Inc. 16: 480-483 (Oct., 1934).—Klason's theory of lignin is reviewed (48 references) with comprehensive citation of supporting evidence. An analytical procedure based thereon has been developed. The greater difficulty of producing sulphite pulp from Douglas fir is not inherently due to the nature of its lignin, and chemically there is no reason why it should not be used for this purpose.—A.P.-C.

X-Ray Studies of Crystallite Orientation in Cellulose Fibers. Natural Fibers. Wayne A. Sisson. Ind. Eng. Chem. 27:51-56 (Jan., 1935).—In well-oriented fibers it is impossible to determine whether the crystallites are arranged with a definite crystallographic plane always parallel to the face of the cell wall, or whether the crystallites are rotated at random around their own axes. However, it is shown that, in fibers having a wide deviation from a parallel orientation or a large spiral angle, it is possible to obtain information in this connection. If the crystallites have a random rotation around their own axes, the diffraction spots from the planes parallel to the fiber axis will be equal; if the crystallites are limited in their rotation, the spots will be unequal. From a study of the density distribution for several fibers and from the synthesis of various possible types of fiber diagrams, it is concluded

that the crystallites of natural fibers have an unlimited rotation around their "b" axes in the face of the cell wall. These results appear to be best explained by the assumption of a definite discontinuity of crystalline structure.—A.P.-C.

The Trip to Finland Taken by the Paper Engineers. Papier-J. 22, No. 11: 121-126; No. 12: 133-138; No. 13: 145-150 (July 27, Aug. 15, 23, 1934).—An illustrated account of the trip to Finland for studying technical problems of the pulp and paper industry.—C.J.W.

Impressions from a Trip to the Pacific Coast. E. Holtan Papier-J. 22, No. 14: 155-159; No. 15: 167-172 (Aug. 31, Sept. 12, 1934).—Discussion of operation of Pacific coast pulp and paper mills.—C.J.W.

Power

Modern Methods of Boiler Water Treatment and Control. H. T. Fisher. World's Paper Trade Rev. 101: 1984, 1986, 2028, 2030, 2068, 2070, 2108, 2110 (June 22, 29, 1934); 102: 60-69, 146-152, 188, 190, 226 (July 6-20, 1934).—A brief mention of various natural waters and their common impurities, followed by a survey of current knowledge of the cause and prevention of scale in steam boilers.—A.P.-C.

Power Possibilities in the Northwest. C. C. Hockley. Paper Trade J. 99: 85-86 (Sept. 20, 1934).—A brief description.—A.P.-C.

Heat Transmission. Charles S. Keevil. Paper Trade J. 99, No. 12: 78-79 (Sept. 20, 1934).—A review of the principles of heat transfer together with illustrations of their application to pulp and paper mill heat transfer equipment.—A.P.-C.

Hog Fuel Burning and Handling Equipment. Harry S. Bastian, Paper Trade J. 99, No. 13: 29-36 (Sept. 27, 1934).—A presentation of the economic trends in the use of hog fuel, together with a description of several types of hog fuel furnaces.—A.P.-C.

Automatic Combustion Control. H. W. Arkell. World's Paper Trade Rev. 101: 1568, 1570, 1608-1612, 1647-1652, 1696, 1698 (May 18, 25, 1934).—A general discussion.—A.P.-C.

Principles of Steam Circulation and Heat Recovery. James Holmes. Paper Maker & Brit. Paper Trade J. International No. 17-25 (1934).—A general explanation and discussion from the standpoint of their application to paper drying and liquor evaporation.—A.P.-C.

Cellulose and Paper. Harry F. Lewis. Paper Trade J. 99, No. 5: 31-37 (Aug. 2, 1934).—A review, with bibliography of 168 references, of American literature published in 1931, 1932 and 1933 on research on cellulose and paper.—A.P.-C.

Slime

Slime Elimination in Pulp Mills. Mitsunori Higaki. Cellulose Ind. (Tokyo) 10: 88-92 (1934).—In slime control, the effect of the chlorination of white water with bleaching powder is less marked than that of the changing temperature, a very rapid change in the properties of white water being observed at 30+5°C. Mineral or organic matters dissolved or floating in white and waste water were determined before and after the addition of bleaching powder, and effect of the change in pH value of white water due to the addition of hydrochloric acid and caustic soda was determined.—A.P.-C.

Development and Control of Micro-Organisms in a Pulp and Paper Mill System. J. R. Sanborn. J. Bact. 26: 373-378 (1933).—The slimes built up on surfaces over which pulp suspensions flow consist of a heterogeneous mass of micro-organisms, products of growth, fiber and inorganic débris. When yeasts and *Monilia* are present the masses are rubbery and difficult to control. In combating slime troubles, encrustation must be mechanically removed. Heavy chlorination of water in the plant may prevent trouble where chlorine does not interfere with the process, by bleaching or corrosion. Otherwise copper compounds may be substituted. Sometimes direct application of calcium hypochlorite may suffice. Vigilance in removing growths and general mill sanitation are most important.—A.P.-C.

Miscellaneous

Relationship Between General, Woods and Mill Management in Our Industry. A. Koroleff. Pulp Paper Can. 35: 455-458 (Aug., 1934).—A general discussion of the relationship and co-operation which should exist between general, woods and mill management in the pulp and paper industry in order to obtain the highest possible efficiency in both woods and mills—A.P.-C.

Technical-Scientific Research in the Paper Mill. P. M. Hofmann Jacobsen. World's Paper Trade Rev. 101: 1150-1154, 1228-1232, 1360-1366 (April 13-27, 1934).—A general discussion, illustrated by means of examples, of laboratory control and mill control in the paper industry.—A.P.-C.

Correlating Research with Operation. Clark C. Heritage. Paper Mill 57, No. 29: 4-8 (July 21, 1934); Paper Trade J. 99, No. 7: 33-37 (Aug. 16, 1934).—A discussion of the fundamentals of correlating the work of the researcher with that of the mill operator.—A.P.-C.

United States Patents on Paper Making. Second Quarter, 1934. Clarence J. West. Paper Trade J. 99, No. 3: 31-34 (July 19, 1934).—A list in numerical sequence of patents relating to pulp and paper making issued at Washington during April, May and June, 1934.—A.P.-C.

Refractories in the Chemical Pulp Industry. E. B. Guenther. Paper Ind. 16: 404-406 (Sept., 1934).—A brief discussion of the refractories suitable for various services in the chemical pulp industry.—A.P.-C.

Composition of Printing Inks in Relationship to Paper and Printing Processes. James Strachan. Paper Maker & Brit. Paper Trade J. 87, No. 5; TS97-98 (May, 1934).—A general review of the principal kinds of printing ink in use and of their physical reactions to paper during printing.—A.P.-C.

Humidity and Printing Papers. D. C. M. Papeterie 56; 810, 813 (Aug. 10, 1934).—A very brief discussion of the effects on paper of variations in the relative humidity of the atmosphere in printing plants.—A.P.-C.

The Action of Concentrated Sulphuric Acid on Cellulose in the Presence of Formaldehyde. René Speitel. Bull. Soc. Ind. Mulhouse 100: 109-111 (1934).—The action of concentrated sulphuric acid (containing at least 55% of monohydrate) on cellulose in the presence of formaldehyde (0.5 g. per 100 g. of acid) differs from its action in the absence of formaldehyde in that the reaction begins more slowly, but when once started proceeds more rapidly and leads immediately to products of low molecular weight without passing through the state of viscous liquids. Without formaldehyde, the products are dry, brittle, and parchment-like, but in the presence of formaldehyde they are stronger and feel like linen. The latter products are resistant to most chemical transformations.—A.P.-C.

Definition of Brightness*

By L. C. Lewis[1]

You have heard an admirably exact statement of the brightness tester's status quo; and the essential facts of its history. (See page 375.) Coming now to define brightness, we must take a good look backward and another forward. We want to know the facts leading up to the definition's birth: the facts which will solidly ground its future usefulness, the refinements necessary. We will consider:

1. The array of facts about diffuse reflection.

2. The existing definitions of brightness, ideal and practical.

3. The likenesses and differences connecting papermaker's "brightness" with grading committees brightness."

Diffuse Reflectors

Two outstanding facts we want to remember are that:

1. A specular (or mirror-like) reflector is one whose surface irregularities (hills and valleys) are small compared with the wavelength of light, which is about one-half of a thousandth of an mm. We are all familiar with this unit, $\mu = 1/1000$ mm., from particle size considerations.

2. A diffuse reflector is one whose surface irregularities are of the same dimensions as the wavelength of light or greater. (Say from 1/10000 mm. to 1 mm.)

Now, when we remember that our paper making fibers are often about 30 μ in diameter, and even our fillers from 1-10 μ in average diameter, we must realize how far all, even our glossiest coated papers, are from being good specular reflectors.

Consider too, that a very clear reflected image may be formed in many lacquered surfaces—but that no recognizable image is formed in the surface of any paper except a very glossy photographic one.

We are dealing with diffuse reflectors producing just enough specular reflection to be bothersome—sometimes. How far is paper from being a perfect diffuse reflector, then? A perfect diffusor is one which behaves as if it knew not whence the light comes which it reflects: it is a new source of light. It produces the effect pictured in the first diagram.

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* Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., Feb. 18 to 21, 1935.

[1] Member TAPPI, Physicist, The Mead Corporation, Chilicothe, Ohio.

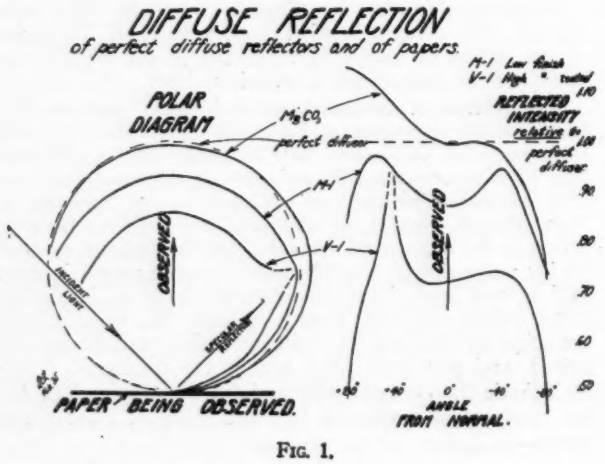

FIG. 1.

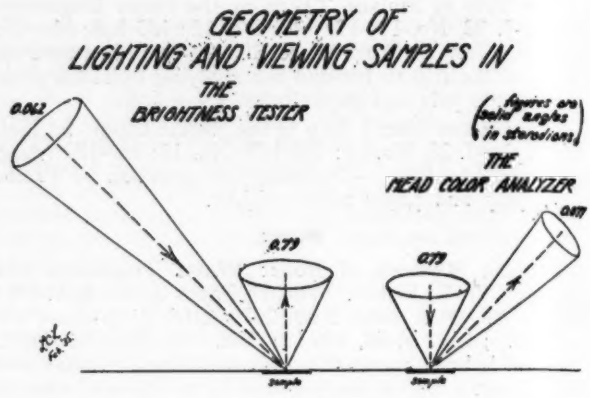

FIG. 2

Looking first at the polar diagram, Fig. 1 on the left we are considering the case of the brightness tester, which is the same case as the normal observation of paper. Light is incident from the left at 45 degrees to the normal and any reflection which takes place specularly comes off at the right at an equal angle.

The intensity of the light we observe normally is represented by the length of the line drawn from the point of incidence to the outline of the diagram in the direction of the normal. The intensity observed if we look at the paper in any other direction say, for example, 45 degrees is less and is given by the length of the line drawn from the same point in the given direction. In the case of the perfect diffuse reflector represented by the circle, if the intensity in the normal direction is 100 units it is 70.7 at 45 degrees to the normal.

Now the outside diagram representing magnesium carbonate approaches quite closely to the circle diagram; however, with the same kind of deviation shown by actual papers, namely, that there is an excess of light corresponding to the direction of specular reflection and a deficiency elsewhere.

The diagram for M-1 corresponds to the facts for M.F. and diagram V-1 to the facts for a somewhat glossy photographic paper. In the latter case the excess of light in the direction of specular reflection is large.

Geometry of Reading Standardized

Now we concentrate our attention on particular conditions of our problem. We hold our printed page perpendicular to our line of sight; and the page gets its illumination from a source at about 45 degrees from this direction. This source varies considerably in extent, yet is of more constant extent than we suspect (from the window in daylight to the reading lamp at night an illuminant about one-half steradian solid angle in extent).

We demand to know characteristics of paper illuminated at 45 degrees to the normal by a source of about one-half steradian extent; and examined by the eye along the normal at about 13 inches. Luckily our results are only slightly affected by moderate variations from the specifications (for perfect diffuse reflectors these variations should cause no error in the results).

The second type of diagram, Fig. 1 should be very useful to us. *(1)* It shows directly the variation of typical reflectors from the perfect diffuse one. In the right hand

half of the diagram is plotted the intensity relative to that of a perfect diffusor against the angle from the normal. Positive angles represent angles on the side from which the light comes. The perfect diffuse reflector is represented by the horizontal line 100. We are interested in the region from zero to plus or minus 27 degrees. $MgCO_3$ is perfect to 1 per cent from — 10 deg to + 30 deg. A dull surfaced sheet M-1 varies about 5 per cent in reflectance from 0 to plus or minus 30 degrees as does V-1, a glossy sample.

The facts demand caution: but the caution having been used, we find surprising reliability of results. This is shown particularly by the example of the second diagram (Mead vs. I.P.C. geometry). Light travels through these instruments in opposite directions and the angles involved are not the same. In spite of the radical differences in definition of reflecting power here, we have an agreement to plus or minus 0.5 per cent for M.F. samples, slightly less good for coated grades.

This agreement may be accepted as a demonstration of the reciprocity theorem; which states that the exchange of lighting and viewing geometry involved here has no effect on the measured reflecting power. Furthermore, it justifies the use in such an instrument of geometry which is the reciprocal of that involved in usual visual observation.

We are building up an exact specification of reflecting power: reflecting power is a ratio of light intensities reflected from sample and from a perfect white diffusor, a ratio for whose definition we require exact specification of two kinds. The first is the geometry of illuminating and viewing arrangements just described. The second is the wavelength or distribution of wavelength—the "color" —not of the light alone: but the resultant of the "color" produced by light source and filter as selectively weighted by the "electric eye." From the beginning of our work we have carefully watched this quantity S I T. In the present design the output in photoelectric current for any wavelength band is actually a product R O I S T $\Delta\lambda$ where I have introduced O the opening of the sector diaphragm relative to full opening and R the reflecting power of the sample. Since O is for all practical purposes the same for all visible wavelengths we pass on to a consideration of the actual weighting of wavelengths—the S I T curve mentioned by M. N. Davis.

Weighting of Wavelengths

In Fig. 3 you see plotted the relative weighting of wavelengths versus the wavelength. Briefly, the S I T curve

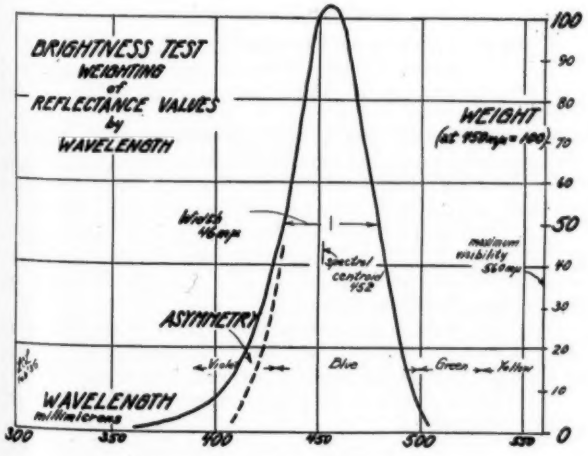

Fig. 3.

is a somewhat broad one (46μ) having a nearly symmetrical shape and a spectral centroid (or effective wavelength for samples with straight line nearly horizontal reflecting power curves) at 452 μ. For usual samples the reflecting power measured will be from 0 to ½ per cent lower than the reflecting power at 450 μ. The importance of radiation outside the blue is negligible for any white paper sample, ¾ of the weight falling between 430 and 480 μ.

We must confess that this data is not directly measured; but calculated from the best available data for S, I, and T respectively. The data for I from General Electric Laboratories, and for T from many measurements both by Eastman Kodak Company and the Institute of Paper Chemistry, is unquestionably good. The data for S is from the General Electric for a representative cell. It is hoped that either this or S I T overall may be directly measured in the near future. But the result given here cannot be far off in any case: we may speak of brightness as a reflecting power for a wavelength of 450 μ.

Development of Definition

Let us proceed from a simplified specification of brightness. The simplified reads:

Brightness, as used in the manufacture of white paper, is the reflecting power of an infinitely thick stack of material (reflectivity) measured to blue light of wavelength 450 millimicrons under conditions of lighting and viewing recommended by the International Commission on Illumination, 1931, as standard.

It is to be regretted that our use of the word brightness is not in accord with usage in the science of optics.

Brightness is a rate of (visible) energy radiation as energy units per sq. cm. per second. This rate varies from the equivalent of one billionth of a candle per square cm. detected by eye from a star in the night sky to 1 candle per sq. cm. from the sun.

Brightness was a comparatively common term in the paper trade designating closely the reflecting power we measure. On this account its use made the adoption and development of this grading method simpler.

We expand this definition to meet requirements of:

1. Appropriateness in use of paper.
2. Instrumentation.

Brightness is the reflecting power of an infinitely thick stack of material measured to blue light of average wavelength 450 μ (actually a wavelength band as defined herein) when lighted normally and viewed at 45 degrees to the normal (by source and viewing apertures as described herein.)

The thick stack specification is written in as being most characteristic of the material. It corresponds to the brightness of paper viewed in a book or magazine (at least on the margin).

The measurement over a considerable band of wavelengths is a distinctly practical conception. It is forced by the use of filters, which make possible simple, relatively cheap instruments. However, it does avoid difficulties due to dyeing of papers in "freak" ways. In fact, the use of the brightness filter approaches surprisingly close to a weighting of wavelengths by their importance in determining blue sensation (on the system of the International Commission on Illumination).

The specification of definite apertures is necessary in any case. Our specification meets simultaneously the demands that the apertures:

1. Approximately correspond to the use requirements of paper.
2. Provide sufficient energy to operate our instrument.

At the present time we operate under the following definition.

Brightness of paper is the reflecting power as measured on the G. E. Reflection Meter using filter No. 1, or as measured on any instrument giving identical results, the instrument being operated under conditions prescribed by and checking against standards furnished by the Institute of Paper Chemistry, Appleton, Wis.

Papermaker's Brightness vs. Grading

Let us be very clear; it was not the intention of the grading committees to duplicate directly the grading of brightness by the buyer of paper or the papermaker. These considerations do not form half their requirements, probably less. We must relate our grading to the cost of the paper, the raw materials; and our grading must not be influenced by every whim for a slightly altered tint.

We must mention too, that whiteness, although in many cases a desirable criterion of papers' value is distinctly not so in many other cases. There are several instances covered by present grading of a demand for definitely yellow sheets, (from 5 to 10 per cent reflectance excess in the yellow); notably for publications in the fields of architecture, gardening, and the like, and for school books.

The choice of brightness definition is a grading committee's field; let us inquire into the relation of the chosen definition to papermaker's brightness.

We need a "shorthand" method of discussing the colors involved in a brightness discussion—meaning the colors of "white" papers—and for the most part "white" papers of yellow raw materials dyed with blue dyes.

We shall use a method very directly related to the papermaker's experience in dyeing these sheets; introducing the minimum of confusing terminology. We consider an actual sheet of "B" grade M. F. book having before dyeing the reflectance-wavelength curve of Fig. 4 marked 6—after dyeing that marked 2.3. (For early work on this subject leading up to the brightness tester, see the writer's earlier

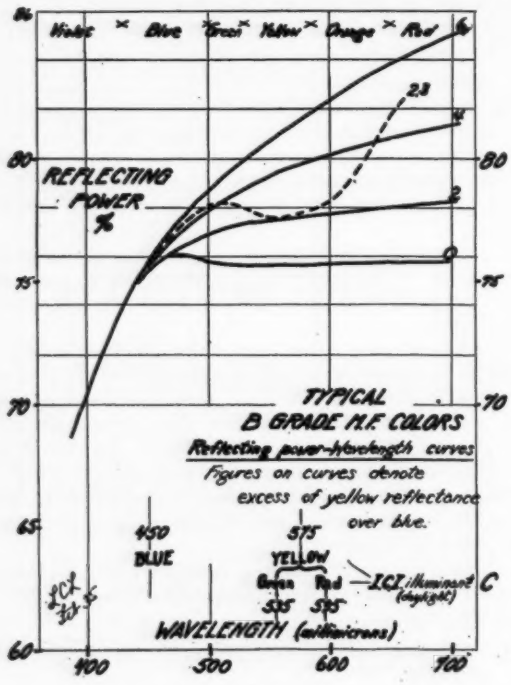

Fig. 4.

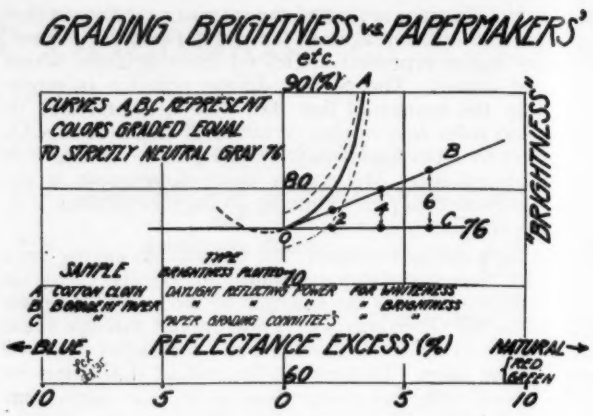

Fig. 5.

papers *(2) (3)*, as well as those of Van Arsdel, Razek, Hatch, and others). The papermaker may very well have produced these colors 6, 4, 2, 0 by dyeing his original furnish with 0, 2, 4, 6 ozs. of his blue (sometimes in combination with reddish) dyes respectively. They are called colors of 0, 2, 4 and 6 per cent reflectance excess because the yellow reflectances (average of that at 555 and at 595 μ is 0, 2, 4 and 6 per cent above the blue (at 450 μ). These are represented on Fig. 5 by the heavy circles marked 0, 2, 4 and 6. When grading brightness is plotted they all lie on the 76 brightness line; but on the slant line when "daylight" reflectance is plotted (at approximately 76, 78, 80 and 82). This method is approximate, curve 2.3 showing a rather extreme variation from the general flattened curves more commonly met and denoted by 0, 2, 4. We now have three conflicting statements about the brightness of these sheets. The papermaker undoubtedly says he has brightened the sheet (at least in dyeing from 6 to 4 or 2): the daylight reflectance, which *might* have been expected to measure brightness, has dropped (by 6 per cent in all): whereas our grading brightness remains very closely unchanged at 76. So the question stops us immediately; "what is papermaker's brightness"? Undoubtedly it is not the same for every papermaker, yet in rough outlines agreed upon by all of us.

The writer has done a great deal of work lately upon this subject. The work is, however, far from being finished, and it will be wise to consider this a report of progress; to which this meeting should give a strong impetus.

Result of Questionnaire

Allow me to report on two phases of this work.

The first concerns a questionnaire sent to three users of the brightness tester. They agreed remarkably on the following items:

(1) That the correlation between papermaker's (or customer's) brightness and grading brightness was good: especially on lower brightness papers (which in general are not dyed heavily with blue or pink dyes).

(2) That, with not too much variation in dyeing, brightness differences of 1 to 2 per cent were visible: that practice permits visual evaluation of "brightness" even on sheets of very different purity.

(3) That brightness is characteristic of a manufacturer's grade in that only 0.5 to 1.0 per cent variation is found on a single order, only about 2 per cent from run to run.

(4) That a precision in measurement of 0.3 to 0.5 per cent is maintained.

(5) That the brightness of raw materials is being usefully related to paper brightness.

Defining Papermakers' Brightness

The second phase concerns visual evaluation of a set of 50 samples ranging from 60 to 85 in grading brightness, from distinctly blue samples to those of 10 per cent or greater yellow reflectance excess.

Several good papermakers were first asked to arrange in order of brightness nine samples evenly space through the brightness range, but each as nearly neutral gray as obtainable. These were arranged with usually no more than one error (near the top of the range). When next asked to arrange in order of brightness a group of samples alike in grading brightness, but varying over the whole range of purity, the observers did not agree nearly as well. Many times the statement was made: "I do not see any difference in brightness." When asked to set this group in proper position with the grays, sometimes the whole group was rated two or three steps above, sometimes two or three steps below the gray of its class. A few very yellow or blue sheets were simply thrown out—they could not be rated.

Now as a starting point for planning this work, let us look at the work of D. L. MacAdam of the Massachusetts Institute of Technology working with Professor Hardy *(4)*. He rather thoroughly evaluated what thirty skilled graders meant by "whiteness" of near white cotton cloth. The next diagram shows a few of his results. (We have converted his "purity" to "reflectance excess" for the sake of simplicity). Consider a sample containing no yellow (Neutral gray) and 76 per cent bright in daylight represented by the point 0.76. A sample 90 per cent bright but 3.3 per cent yellow appears to be of the same whiteness as the first mentioned sample. The classes of samples 74 and 78 per cent bright just distinguishable from the 76 as darker and whiter respectively are shown by dotted lines.

Now consider a class of samples all having 76 grading brightness; some from 0 to 10 per cent yellow as well as some blue reflectance excess. They all fall along the horizontal line through 76 if we plot grading brightness. The sample having 3.3 per cent yellow excess will now rate 76 grading brightness but about 79 daylight brightness. This latter sample is not nearly as white as the earlier mentioned sample with 90 daylight brightness; in fact it is two steps less white. Therefore, MacAdam's class of equally white samples probably does not correspond to the class of sheets with papermaker's brightness 76. His classification made for whiteness of cloth unduly penalizes the yellow papers.

My personal experience leads me to think that the class of papers equally as bright to a papermaker as the gray 76 is represented by a line somewhat above the slant line drawn on the daylight brightness chart. (Deviating farther from it the yellower the sample).

This class will correspond rather exactly to the group of papers made from identical raw materials showing 76 brightness and 10 per cent yellow excess undyed; these papers being dyed with varying amounts of blue. (It should be added that papers more than 1 to 2 per cent blue will be rated lower than this class at 76 if they carry grading brightnesses of 76; also that the raw materials may have had any intermediate or slightly greater yellow reflectance excess).

The present conclusions should be considered tentative with the exception of the following statements:

(1) Brightness is not uniformly defined by papermakers, although,

(2) Presented with a concrete problem, they will reach an agreement. There must, therefore, be a reasonable, single valued average answer to "what is papermaker's brightness"?

(3) Two papers of noticeably different grading brightness (3 to 4 per cent) will, no matter how skilfully dyed, be noticeably different when dyed to optimum papermaker's brightness.

The paper industry appears to be the first to adopt a well-defined reflectivity as a grading characteristic. This progress is due to the vision of a very few executives who encouraged fact-finding physical investigations in the days before the N. R. A. Codes. (As well as to the psysicists who carried on this work). The industry should be congratulated on a sound technical advance: and will, the writer believes, become increasingly aware of this fact.

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Sheet Formation on Fourdrinier Wire*

By M. M. Rubin[1]

Abstract

Any basic principles for sheet formation on the fourdrinier wire at medium and high speeds should include a consideration of the following:

1. The chemical characteristics of all raw materials composing the beater furnish.

2. The effect of processing on these materials.

3. Tabulation and control of interrelated dependent and independent paper machine operating variables.

In using the term "sheet formation" a differentiation should be made between formation as regards discussion of finished paper quality testing and inspection, and sheet formation concerned with the machine operations and operating control variables of paper manufacturing.

Considering formation as a finished paper quality, it is one of the most important non-measurable paper characteristics. Last year P. K. Baird of the Forest Products Laboratory, Madison, Wis., reported a simple yet comprehensive statistical survey of some 54 significant sheet properties. In order of importance the ratings for all papers was partially as follows: 1. Finish, 2. Color, 3. Bursting strength, 4. Ream weight, 5. Formation, 6. Cleanliness, 7. Tearing strength, and 8. Folding strength.

The responsibility of technical men in paper manufacturing control is generally for measurable properties. Such properties as bursting strength and ream weight are definitely measurable by methods and equipment defined and well known to the paper industry. Formation can be considered, then, as one of the three most important properties of all papers which is still in the category of judged rather than quantitatively measurable qualities.

* Presented as a discussion of G. D. Bearce's paper on "The Influence of Head Box and Slice on Sheet Formation" at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., Feb. 18, to 21, 1935. See PAPER TRADE JOURNAL, Jan. 17, 1935.

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For coarse grade papers, such as standard newsprint, the relative ratings for various sheet properties per Mr. Baird was in part: 1. Finish, 2. Formation, and 3. Color.

It is evident here that formation is second only to finish, and is a factor which affects directly or indirectly a large number of other paper qualities. For example, the folding strength, an important test in determining permanence and durability of fine papers, is affected markedly by sheet formation. The area of paper sampled for a single test is 15 mm. wide and about 101 mm. long, but the area of this sample actually under test at the folding machine blade is very small, being 15 mm. by about .55 mm. In a sheet of wild formation great variations will be observed in individual tests for fold, in many cases, especially on heavier weight bonds, the folding strength has been observed to be higher in the machine than cross direction. This is generally considered as incompatible with accepted paper testing theory.

In judging or developing any instrument for measuring sheet formation quality, certain optical and psychological reactions must be considered. The writer's experience in testing and quality inspection of papers indicates that color affects finished sheet formation appearance. Especially with long fibered stocks, the inspector's judgment will be influenced by sheet color, a well closed sheet of white bond paper appearing wilder in formation as the color changes from white to yellow, to green, and to blue.

Influence of Furnish

With regard to influence of raw materials, processing, and machine operating variables on sheet formation, the type of sheet formation on a moving paper machine wire and the water drainage through the fibrous pulp mat during sheet formation are matters which are inter-related and of great practical and economic significance in paper making. The whole furnish and its preparation and refining before reaching the wire is limited by the capacity of the wet end of the machine and the particular type of sheet to be made on it, and the wet end in turn is restricted by the capacity of the drying section. In general, the particular stock available must be adjusted by blending and processing to fit the paper machine, since the machine can only be roughly adjusted to the stock.

The furnish consists, usually, of a large number of different sizes and shapes of fiber particles and fibers, and the amount of fibrous and non-fibrous material retained in the sheet and its distribution therein depends on the manner in which water removal occurs. Water removal in turn is affected by the character of the furnish, how much and what portion of the fibrous material remains on the wire, as well as the mechanical behavior of the wet end. These are some of the problems classified under paper machine variables.

Laboratory checked studies on commercial fourdrinier machines in operation have disclosed over one hundred machine operating variables; a list of 98 such variables already recognized showed the following subdivisions:

Location	Paper Machine Variables
Between pond or head box and first felt roll	37
First press	10
Second press	9
Third press	9
Third press to first dryer	6
First dryer to reel	27
Total	98

It is evident that the largest number of variables are located in that section of the mechanical paper making equipment most concerned with sheet formation.

Fiber distribution and uniformity of sheet formation at the wet end is dependent largely on fiber length and flobility. The average length of coniferous sulphite fibers has been reported as about 3 mm. ot soda pulp from deciduous wood fibers as 1 mm. and the width about 1/10th of the length. Both chemical and mechanical pulps are to be considered as highly complex mixtures. By screen analysis or fractionation of unrefined sulphite pulp, it has been shown that the shorter fibers differ physically and chemically from the longer fibers. Very short fibers in unrefined first quality sulphite pulps may be considered as of slow drainage in tissue paper manufacture, and comparatively free drainage when compared with well refined pulp such as used in glassine sheet formation.

With groundwood pulp the problem is even more complex, and some data by Yorston on screen analysis of a sample of slow groundwood, used in the manufacture of groundwood printing or catalogue papers, is pertinent on this factor of relationship of stock to sheet formation:

	Per cent	Lignin Per cent	Chlorine No.
Retained on 7 cut screen	.32	....	...
Retained on 10 mesh screen	.16	....	...
Retained on 20 mesh screen	3.16	....	...
Retained on 30 mesh screen	8.31	....	...
Retained on 50 mesh screen	11.14	28.23	29.1
Retained on 90 mesh screen	24.66	....	29.7
Retained on 200 mesh screen	25.59	28.53	...
Flour by difference	26.66	35.46	40.0
Total	100.00 per cent		

It is apparent that such a sample of groundwood before refining is composed of particles of at least 8 different dimension classifications with 75 per cent of the mixture ranging from .28 mm. to .12 mm.

Also, the chemical differences in fractions of groundwood pulp are given and are of importance in white water sampling and analysis by chlorination as compared to microscopical methods. In a sheet containing 30 per cent unbleached sulphite and 70 per cent groundwood, the machine white water indicated 20 per cent unbleached sulphite and 80 per cent groundwood by microscopical test and about 102 per cent groundwood by Roe-Genberg chemical chlorination test method, owing to preponderance of flour in such white water samples.

In manufacturing news grades of good finish, formation, and printing qualities at high speeds with a high slice from mixtures of about 25 per cent unbleached sulphite and 75 per cent groundwood, with little or no beating, the operating conditions at the head box, slice, and on the wire are influenced greatly by the wood grinding and chemical pulp digesting processes. Control of stock quality-strength, freeness and drainage characteristics of groundwood at the stones cannot be too strongly emphasized in such mills. The sulphite is usually of the quick cook high chlorine number type, yielding a coarse free pulp. In the interest of cost reduction, sulphite percentages on news grades have been reduced from about 25 to 10 per cent and even lower. At lower speeds water is cut off at the wet end to raise the pond consistency, compensate for higher mixed stock slowness and reduce drainage load on the wire. At higher speeds the mechanical and hydraulic conditions are less favorable and more sulphite is necessary. In some cases where too coarse and free a groundwood was produced at the stones in Canadian high speed news mills a sheet of good formation and printing qualities could be produced only by incorporation of 2.5—3 per cent clay, in violation of the definition of tariff free newsprint rulings and evoking complaints from competing American manufacturers of these grades. In contrast to such operating conditions are mills using 100 per cent rag stock, beaten 16 hours or more and run on machines at a speed of about 20 f.p.m., or bleached sulphite pulp cooked 16 hours to produce slow stock susceptible to beating at elevated temperature for production of glassine stock run on the wire at a temperature of 140 deg. F.

It is evident that the nature of the action of the stock and water mixture flowing out on the wire is dependent on many chemical and physical as well as mechanical factors, and these include the composition of the fiber furnish, amount and type of clay, starch, size, colors, alum. The aim is to obtain first maximum dispersion at the point of delivery of the suspension to the wire. At the consistency present in the flow box the degree of dispersion will depend on the nature and length of the fibrous furnish as well as the degree of beating and refining. With equivalent beating, the degree of stock dispersion in water might be classified in the following order: 1. Esparto, 2. Soda, 3, Bleached Sulphite, 4. Kraft, 5. Unbleached Sulphite, 6. Cotton, and 7. Linen.

This indicates why addition of 5 per cent esparto to a furnish of 75 per cent bleached sulphite, 25 per cent soda will improve sheet formation. The influence of processing must not be overlooked, however, as unrefined short soda pulp will produce a sheet of wilder formation than 100 per cent long fibered sulphite, and the addition of 5 to 10 per cent of soda pulp to the beater when dumping the stock will result in a freer draining dispersion on the wire in spite of addition of shorter fibered pulp. Properly prepared clays and starches are plastic colloids in nature and assist dispersion and closer sheet formation. Other similar fillers will improve sheet formation, but use of chalk in a sized paper is detrimental owing to foam production on the wire by liberation of gases due to interaction with alum.

Foam Causes

The amount of starch added to the beaters usually is not over 2 per cent and normally the retention is about 50 per cent, but by means of colloidal chemical control it has been found possible to add up to 6 per cent raw starch to the beater furnish recently with good retention and improve sheet properties. Treated starches of course are more efficient in effecting dispersion of fibers, fillers, and rosin size due to protective colloidal action. Seed starches generally contain more oil than root or stem starches, and raw starch contains more than treated starch, so that this component of the furnish is at times conducive to production of froth and foam at the head box, slice, and machine wire and resulting in a sheet of wild formation.

Any chemical or mechanical condition favorable to formation of froth and foam at the wet end is detrimental to good sheet formation. It is well known to paper makers and engineers that when white water is mixed with air trapped in a fan pump, for example, and introduced into the head box and projected on to the wire from the slice in an upwardly directed current, the gas bubbles adhering to the fibers are lifted to the surface. Correct matting as well as initial fiber coat deposition on the wire is disturbed with resultant poor sheet formation in spite of otherwise perfect hydraulic and mechanical conditions at the head box and slice. Accordingly, all factors which tend to produce foam at the wet end of the paper machine demand attention on this problem. A tabulation of points where foam has been reported and the number of times, on nearly all grades of paper, may be of interest. In 35 mills foam was reported a total of 65 times from 17 different points in the mill. On a statistical basis, the more important locations included:

Screens	14
Head box	11
Wet end of machine	4
Flow boxes	3
Wire	3
Inlet to paper machine	2

The causes of foam and number of times cited were as follows:

Mechanical agitation	22
Acidity, alkalinity, pH	18
Size	13
Dyes	11
Incomplete pulp washing	9
Nature of furnish	4
Raw water condition	3
White water	1
Casein from old paper	1
Starch in furnish	1
Chemical action	1
Excessive temperature	1

The greatest amount of trouble from foam in these mills took the form of poor sheet formation and foam spots in the paper. Out of 13 drawbacks due to foam in paper, formation and foam spots were listed 25 times out of a total of 50 recorded mill complaints. From the above data it is apparent that such conditions as leaky pumps, improperly precipitated rosin or wax sizes and some dyestuffs (notably orange Y, orange RO, Auramine) as well as improper design and construction of screens, head box and slice will give rise to physical and chemical conditions affecting sheet formation. One piece of equipment often used by paper makers to break up foam bubbles is a fine spray of steam projected against the wet sheet about half way down the machine wire.

Fiber dispersion is related also to rate of fiber swelling and hydration or fibrillation during beating and has been shown to be dependent on such fiber constituents as pentosan or mannan, presence of acid or alkaline pulp lignins, and temperature of the water used as a processing and conveying vehicle. Some data on influence of temperature on water imbibition have been given by A. St. Klein:

Time	Temperature	Per cent Imbibition
30 minutes	10.°C	5.7
30 minutes	45.°C	6.0
5 hours	10.°C	13.3
5 hours	45.°C	25.3

On rag stocks, H. F. Lewis of the Institute of Paper Chemistry has reported recently that the rate of beating, or time required to reduce the stock to equivalent freeness by controlled beating, is somewhat faster at 25 deg. C. than at either 6 or 45 deg. C., the slowest beating of all taking place at 85 deg. C.

In mills having a hard water supply and using excess rosin and alum for paper sizing, poor stock dispersion and sheet formation has been noted at the wire due to gummy depositions on the wire meshes. Sheet formation is affected directly by resin and pitch content of the pulp furnish. Pitch is liberated from some pulps during the process of beating and refining and accumulates in a closed white water system as a colloidal suspension of negatively charged particles. Now, the friction of the machine wire on the suction box covers produces a positive charge on such wooden surfaces, forming an excellent point of precipitation and deposition of pitch, which is then rubbed off and into the wire meshes. The Hazmburg patent for use of an electrically charged grid in the head box to precipitate such pitch in the pulp suspension as well as maintain dispersion of the stock mixture flowing to the wire has been mentioned by G. D. Bearce. Other means of removing or neutralizing such pitch by mechanical, chemical, and electro-chemical methods are known and are being used to improve sheet formation as well as wire life.

Head, Temperature and Consistency

The head, temperature, stock consistency in the flow box and velocity of emission at the slice have been pointed out as factors of major importance in sheet formation. Some years ago a prominent consulting engineer and news mill manager in Canada obtained data on velocity of stock flowing out on the wire as calculated from the hydraulic head observed and speed of the machine wire. With machines operating on news grades at speeds around 1000

r.p.m. the optimum sheet formation was found to be compatible with a wire speed about 100 f.p.m. faster than the stock velocity issuing from the flow box lip. By means of a liquid level recording device in the head box, variations in sheet formation as related to machine speed were traced back to changes made by machine operators at the flow box, especially during changes of shift. The factors of stock freeness and drainage must be considered as at least of equal importance in attempting to control hydraulic conditions at the head box. However, this data is in close agreement with that quoted by Mr. Bearce and Mr. Lund where the wire speed is calculated as 96 f.p.m. greater than velocity of stock coming from the slice with machine speed at 900 f.p.m. for optimum sheet formation.

The temperature of the water coming to the head box is subject to changes due to seasonal variations. In Northern mills a temperature maximum of 79 deg. F. in July as compared to 48 deg. F. in December have been reported. As regards optimum water temperature, the best and strongest paper has been reported as made in the fall and spring, when water conditions are not freezing but about 40 to 50 deg. F. Such seasonal temperature changes as noted above markedly affect water viscosity and rate of drainage on the wire during summer and winter operations. It is generally known that a reduction of stock temperature decreases the drainage rate on the wire, enhances the effect of the shake, thereby improving sheet formation. In some mills, where manufacture of uniform papers throughout the year is the aim, water and stock temperature variations are corrected for by bleeding steam into the white paper at machine mixing box to maintain constant head box temperature the year around instead of making compensating readjustments periodically of relationship of flow box outlet, breast roll, and apron.

An increased water temperature in summer is to be correlated also with increased microbiological activity and slime accumulation. Poor sheet formation and strength are often a result of the "water proofing" effect of slime coating on individual fibers diminishing fiber length and surface and fibrillation, and blinding of the machine wires due to slime coating on the wire fabric. Improved sheet formation by slime reduction by water and white water chemical chlorination control is evident.

Consistency of stock flowing on to the wire is of prime importance in relation to sheet formation. High consistencies at the head box are compatible with heavier weights and paper grades and reduced machine speeds in accordance with machine drying capacity. The stock dispersion decreases, of course, with increased consistency, making it more and more difficult to produce a sheet of well closed formation as the substance weight increases. Dependent on machine speed, stock freeness, and wire drainage capacity, more water can be carried along usually with lighter weight papers to obtain better dispersion in the head box and at the slice. On light weight sulphite waxings and tissue grades some machine tenders always try to run such stocks on to the wire at a speed equal to or slightly greater than the wire speed. With fast, free running stocks a better sheet is formed by slightly overflowing or flooding the stock suspension on to the wire.

The value of the perforated stock distributing roll in promoting dispersion and preventing flocculation behind the slice with high consistency is noteworthy here. The roll is kept revolving by a small motor attached to one end of the roll shaft outside the head box, and the number of revolutions per minute is fixed but usually higher at lower consistencies. 17 r.p.m. has been noted on 37 pound basis weight bond, and 23 r.p.m. on 21 pound basis weight waxing on two machines with a high head slice operating on bleached sulphite papers.

The importance of the jordan, too, must not be lost sight of here. Some machine operators prefer to slow up free stock on heavy weights by setting up the jordan and improving sheet formation thus instead of adding water to promote dispersion. Until the technical man has sufficient data and fundamental principles to enable him to advise or determine precisely beforehand for the machine tender what head box and slice conditions are consistent with good operating practice on a given grade, this portion of the subject must remain an art rather than a science. Some data has been collected on head box consistencies, slice opening, etc., on several machines.

The wire length on these machines varies from 65 to 85 feet and speed of operations varies from 150 to 1500 f.p.m. Transfer of this feature of wet end operations from an art to a science will involve much thought and effort. At present it is impossible and perhaps undesirable.

Moreover, any data on consistency at the head box are not to be considered as absolute lines of demarcation for various grades of paper. The writer has seen bl, sulphite waxing grades made on one machine with a high slice where consistencies at the head box ranged from .1 to 1.0 per cent, the weights on such grades in general will vary from 7 to 75 pounds, 24 x 36—480 basis.

With regard to the function of the slice in successful operation, the delivery of a sheet of liquid of uniform thickness across the wire and equal stock velocity in every part of the slice opening is an ideal condition and correct from an engineering and theoretical standpoint. From the point of view of the practical machine operator and the mill service or operations control engineer, the facts are a bit different. We know from practical hydraulics that the top of an open stream flows faster than the bottom or sides, the average velocity at half the depth being 83 per cent of the surface velocity. By idealizing conditions and ignoring phenomena which are known to exist, it is pos-

TABLE I

Machine	Available Head, Inches	Type of Slice	Actual head. Height of stock above apron board, inches	Slice opening, inches	Head Box consistency, per cent B.D.	Grade and basis of paper	weight
A	28	Voith inlet	9¼	.62	.36	24x36—480=30 lb.	Bl. Sulphite Waxing
			6¼		.39	24x36—500=32 lb.	Groundwood printing
			7¼		.44	" =35 lb.	Bl. Sulphite bond
			4¾		.59	" =46¼ lb.	Bl. Sulphite bond
B	28	Voith inlet	15½	.78	.30	24x36—480=21 lb.	Bl. Sulphite manifold
			13½		.32	" =23 lb.	Kraft Waxing
			15½		.35	" =26 lb.	Bible book
C	43	Voith inlet	12½	.66	.29	24x36—480=21 lb.	Bl. Sulphite waxing
			9½		.34	" =25 lb.	Tissue wrapping
D	40	Voith inlet Van de Carr slice	23½	.38	.48	24x36—500=19 lb.	Catalogue
			23½		.49	" =22½ lb.	Rotogravure
			23½		.52	" =25 lb.	Groundwood printing
E	84	Voith inlet Van de Carr slice	45	.70	.65	24x36—500=32 lb.	News

TABLE II

Machine No. X ..	Front .5	1.	Distance from edge of reel—ft. 1.5	2.	2.5	3.	3.5	4.	4.5	5.	5.5	6.	6.5	7.	7.5	8	8.5	9.	9.5	10	10.5	11.	11.5	12	12.5	Back 13
Grade-Waxing ..																										
basis wt. (21).	21½	20¾	21½	21	21½	21	21½	21½	21½	21¾	21	20½	20½	20¾	20½	20¾	21	21½	21½	21¾	21¾	20	20½	20¾	20½	
Caliper-inches	.00184	.00178	.00178	.00178	.00175	.00172	.00169	.00169	.00169	.00169	.00175	.00181	.00181	.00178	.00175	.00175	.00175	.00175	.00175	.00175	.00175	.00175	.00175	.00175	.00175	
Bulk-Index	86	88	84	85	82	82	80	80	79	77	84	89	89	86	86	85	84	83	83	83	83	88	86	85	90	
Caliper 1 sheet × 10⁴																										
= Basis weight.																										

Butt roll trim — 1½ inches from front side, 4 inches from back side — weight limits = minimum 19.95 Maximum 21.63

Machine No. Y																										
Grade Ledger ..	59	62	65	65	63¾	64	63	62¾	63	63½	64	63¾	62½	63½	65	65¾	65¼	63½	62¾	62¾	62¾	63½	63½	63½	62	60½
Basis Wt. (64½ lb.)																										
Caliper	.005125	.00525	.00525	.00516	.00516	.00519	.00516	.00516	.00516	.00516	.00522	.00519	.005125	.005125	.00516	.005125	.00519	.00516	.005125	.00506	.00500	.00500	.00500	.00503	.0050	.00512
Bulk index	87	86	81	80	82	82	82	82	82	82	82	82	82	81	80	78	80	82	81	80	80	79	79	79	81	85

Butt roll trim — 19 inches from front side, 15 inches from back side — weight limits = minimum 61.6 Maximum 66.1.

sible to study hydraulics as a subject in pure mathematics or physics. It is evident that hydraulics is not an exact science, and in its actual application much depends on the judgment, experience, ingenuity and imagination of the engineer. Each paper machine may be considered as a mechanical individual, with mechanical characteristics and idiosyncrasies dependent on differences in design and construction peculiar to each machine, its operating variables on the grade of paper being produced with the type of raw materials provided for conversion to paper. In some mills of the writer's acquaintance it is customary for the mechanical department to install all new slices exactly level all the way across and with the opening set uniformly with the micrometer at 5/8 inches.

The data given above will indicate the variation from this figure of the actual opening with the slice operating satisfactorily. The paper buyer is not interested in a level sheet at the wet end, but a finished sheet of uniform weight and specified caliper within the limits allowed by trade customs. Accordingly one of the simplest control tests for checking operation conditions of the slice, wire, presses, drying and calendering operations is to take a series of weigh samples, say every 6 inches across the finished reel. With a metal template 6 x 18 inches, such a series of paper samples across the reel from front to back edge of the machine can be collected and tested by two men in about 10 minutes without interfering with machine operations. The following data in Table II are typical:

In the first example there is a strip of heavy weight paper 5 feet from the front edge of the reel. The slice inlet is racked down slightly at this point to maintain the weight within limits. In the second example the weight is light on the edges of the reel, but no changes are made at the slice since this paper is removed by the butt roll trim at the winder. The advantages of the Voith high pressure type stack inlet design in correcting for variations on weight and caliper across the machine are evident. The bulk index data give a check also on the rolls crown in the calendar stack and may be correlated in many cases with sheet finish. On fine and specialty machines, the Neilson slice has been used to reduce caliper variation across the machine from .0 per cent to less than 1 per cent.

With fine papers ranging from 16 to 24 pound folio weight one of the difficulties encountered on some types of paper machines is grainy sheet edges. These edges cause not only a loss in production as they must be trimmed off, but offer a quality feature which is non-measurable and difficult to evaluate by inspection. The cause of such troubles in manufacturing are attributed both to stock conditions and to a large extent to differences in drying and shrinkage of the sheet edges as compared to the center. One of the remedies is to run the edge of the sheet heavy. With the older types of machines with pond and double bar slice, this may be accomplished by insertion of obstacles near the edges of the pond to divert the stock and produce local eddies which will make the edges of the sheet heavier. With the high head and Voith inlet type of slice such adjustments are difficult and possible only to a limited extent by manipulation of the slice ends.

The more important variables at the wire proper, the actual point of sheet formation, include the wire length, mesh, and type of seam construction. Wire mesh and length are related directly to stock drainage rate and formation. The magnitude of water removal force at the wet end involves a method of calculation dependent on an analysis of the mechanics of the drainage tester. From the drainage tester equation, time of drainage and initial head of fluid causing flow, W. B. Campbell of Forest Products Laboratory of Canada has determined some interesting data on forces exerted by the machine to cause water removal. For a newsprint machine the following was determined:

Basis weight, 24x36—500	= 32 pounds
Machine speed	1200 f. p. m.
Consistency of stock furnish	.6525 percent
News furnish—drainage test	17 sec. per gram
Initial thickness of stock layer on wire	8. mm.

The table rolls for these conditions exerted a suction head effect equivalent to about 20 cm. of water, and the drainage time necessary to drain the initial suspension on the wire to the dryness found at the suction in boxes is about one second. Sheet formation is by no means complete after the web has passed the suction boxes and couch roll. A series of tests on a small paper machine with operation variables under control at the plant of Manchester College of Technology were reported recently. From the data obtained by Robertson and Bailey it appears that the rolling action of the presses, the stretching of the paper between the draws and especially the drying between cylinders has an effect of orienting the fibers in the sheet.

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Klein, A. St., *"Chemie and Papier-fabrikation."* Otto Elsner Verlagsges, Berlin S. 42.

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Apprenticeship in the Paper Industry*

By Harold G. Noyes[1]

On June 27, 1934, President Roosevelt issued Executive Order No. 6750-C providing that persons may be employed as apprentices at wages lower than the minimum established in NRA codes if certain provisions are complied with by their employers.

The regulations set forth in the President's Executive Order are:

(1) A person may be employed as an apprentice by any member of an industry subject to a Code of Fair Competition at a wage lower than the minimum wage, or for any time in excess of the maximum hours of labor, established in such code, if such member shall have first obtained from an agency to be designated or established by the Secretary of Labor, a certificate permitting such person to be employed in conformity with a training program approved by such agency, until and unless such certificate is revoked.

(2) The term "apprentice," as used herein shall mean a person of at least 16 years of age who has entered into a written contract with an employer or an association of employers which provides for at least 2,000 hours of reasonably continuous employment for such person and his participation in an approved program of training as hereinabove provided.

(3) A committee shall be established by the Secretary of Labor to advise such Secretary in the exercise of the powers herein conferred, and to perform such other functions as the Secretary may direct. Such committee shall be composed of one or more representatives of the Office of Education, the National Recovery Administration, and the United States Department of Labor.

In order to carry out the provisions of the Order a Federal Committee on Apprentice Training was established under the Secretary of Labor.

Soon after the Federal Committee on Apprentice Training was organized, plans were made and State Committees on Apprentice Training were organized and authorized to prepare and submit plans for apprenticeship in the several states.

These state committees in general are composed of members drawn from the State Department of Labor, State Office of Education, State Reemployment Service, State Recovery Administration, and representatives of employers and labor in the state.

These state committees on apprentice training are authorized to approve apprentice contracts in the several states.

The program of which this activity is a part applies only to occupations and trades in which the training period is for one year or more. It has been found that there are numbers of unemployed boys who because of conditions have not had an opportunity of learning trades or entering skilled occupations. To provide an opportunity whereby many of them can be given this start and at the same time enable industry to keep a certain number of young people coming along is the purpose behind the plan.

Reasons advanced for apprenticeship in industries and trades is set forth by William F. Patterson, Executive Secretary, Federal Committee on Apprentice Training, in an address delivered over the Columbia Network from Station WJSV, Washington, D. C., on November 28, 1934:

"First, the man or woman who has a broad preparation is usually the last one to be laid off in periods of slack business.

"Second, the all-around training received qualifies the individual to perform many jobs and operations; hence he can easily be shifted from one position to another within an industrial organization.

"Third, it is much easier to secure employment in another concern, even a different city or state, if the applicant possesses a diploma of graduation from a real apprentice course, and

"Fourth, the thorough training which the apprentice receives provides an escape from the dull, deadening monotony which falls to the lot of the specialist."

In setting up an apprenticeship program for the industry suggested steps are outlined:

1. The occupation for which new workers are to be trained should be determined.
2. The jobs leading to this occupation should be determined.
3. The time given to each job necessary to learn the operation should be determined.
4. From the consideration of these facts, the time necessary to make a skilled or journeyman worker out of an apprentice in the occupation for which he is being trained should be determined.
5. Establish a wage for each job so that the beginning wage shall not be less than 25 per cent of the journeyman wage in the occupation for which the training is being given and that the average over the total training period shall be more than 50 per cent of the standard wage for the occupation. As a guide in this step the following schedule is suggested by the U. S. Office of Education, Vocational Division:

   33⅓ per cent for one-fourth of the time
   50 per cent for one-fourth of the time
   75 per cent for one-fourth of the time
   Full pay for one-fourth of the time

6. Determine the number of hours that the apprentice shall work each week. This will probably vary with the job and occupation. At first it may be possible that the apprentice will work about one-half of the time allowed a journeyman. The amount of time given to work may be increased each quarter of the training period until he is working the full number of hours the last part of the training period.
7. The number of hours given to instruction under public supervision should be determined, based on the needs of the technical content of the occupation. The number of hours devoted to instruction will probably be greater during the first part of the training period than later. There should be careful coordination of the instruction with the work or job experience of the apprentice while at work.
8. Apprentices should be carefully selected to make sure that they have the necessary native ability to succeed in the occupations for which they are being trained.
9. After selection, an agreement is drawn up between the management and the individual, setting forth the various stages through which the training program takes the apprentice. This contract must then be approved by the State Committee on Apprentice Training which is the agency authorized to approve such contracts.

* Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., Feb. 18 to 21, 1935.

[1] Member TAPPI, Personnel Manager, Oxford Paper Company, Rumford, Maine.

IMPORTS OF PAPER AND PAPER STOCK

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING AUGUST 3, 1935

CIGARETTE PAPER

Champagne Paper Corp., Normandie, Havre, 416 cs.: ———, Pulaski, Gdynia, 217 cs.; Gluckman & Strauch, Sarcoxie, Bordeaux, 4 cs.; H. H. Strauss, Sarcoxie, Bordeaux, 425 cs.; Champagne Paper Corp., Sarcoxie, St. Nazaire, 111 cs.

WALL PAPER

W. H. S. Lloyd & Co., American Farmer, London, 2 bls., 8 cs.; Titan Shipping Co., Cliffwood, Gefle, 9 cs., 1 ctn.

NEWSPRINT

News Syndicate Co., N. Y. News, Thorold, 2855 rolls; Jay Madden Corp., Gunnaren, Kotka, 301 rolls; Lunham & Reeve, Inc., Gunnaren, Kotka, 216 rolls.

PRINTING PAPER

Meadows Wye & Co., Black Tern, Antwerp, 1 cs.; Steiner Paper Corp., Black Tern, Antwerp, 5 cs.

WRAPPING PAPER

Standard Products Corp., Westernland, Antwerp, 21 rolls; Steiner Paper Corp., Hamburg, Hamburg, 11 cs.

PACKING PAPER

Chas. Happel, Maasdam, Rotterdam, 8 cs.

FILTER PAPER

H. Reeve Angel & Co., Inc., American Farmer, London, 5 cs.; Eastman Kodak Co., American Farmer, London, 1 cs.; A. W. Fenton, Inc., Hamburg, Hamburg, 100 bls.

FILTER COMPOUND

H. Reifenberg, Hamburg, Hamburg, 90 cs., 20 bls.

SURFACE COATED PAPER

Gevaert Co. of America, Westernland, Antwerp, 51 cs.; Metropolitan Importing & Manfg. Co., Hamburg, Hamburg, 7 cs.; Globe Shipping Co., Hamburg, Hamburg, 1 cs.

BARYTA COATED PAPER

Globe Shipping Co., Europa, Bremen, 20 crates.

BASIC PAPER

Globe Shipping Co., Europa, Bremen, 26 cs.

METAL COATED PAPER

K. Pauli Co., Hamburg, Hamburg, 5 cs.

PHOTO PAPER

American Express Co., Hamburg, Hamburg, 83 cs.

COATED PAPER

Chas. Happel, Hamburg, Hamburg, 2 cs.

TRANSFER PICTURES

Rohner Gehrig & Co., Europa, Bremen, 9 cs.

DECALCOMANIA PAPER

B. F. Drakenfeld & Co., American Importer, Liverpool, 20 cs (duplex).

DECALCOMANIAS

Sellers Transportation Co., Europa, Bremen, 13 cs.; Sellers Transportation Co., Hamburg, Hamburg, 10 cs.

TISSUE PAPER

———, Rex, Genoa, 6 cs.

STENCIL PAPER

Chas. Happel, Westernland, Antwerp, 3 cs.

COLORED PAPER

Borden Riley Paper Co., Westernland, Antwerp, 10 cs.; International F'd'g Co., Hamburg, Hamburg, 7 cs.

CELLOPHANE

———, Kwanto Maru, Osaka, 2 cs.

MISCELLANEOUS PAPER

National City Bank, Kwanto Maru, Yokohama, 11 cs.; Jay Madden Corp., City of Fairbury, Helsingfors, 10 bbls.; Japan Paper Co., Peter Maersk, Kobe, 38 cs.; Coty Processing Co., Normandie, Havre, 6 cs.; Keller Dorian Paper Co., Pr. Monroe, Marseilles, 3 cs.; T. N. Fairbanks, Rex, Genoa, 2 cs.; ———, Rex, Genoa, 9 cs.; Jay Madden Corp., Hamburg, Hamburg, 4 cs., 150 bbls.; J. P. Heffernan Paper Co., Hamburg, Hamburg, 65 bls.; Irving Trust Co., Komaki Maru, Kobe, 7 cs.; Standard Products Corp., Komaki Maru, Yokohama, 4 cs.; H. Reeve Angel & Co., Inc., Komaki Maru, Yokohama, 10 cs.

BAGS, BAGGINGS, ETC.

———, Kwanto Maru, Osaka, 40 bls. rags; ———, Kwanto Maru, Nagoya, 75 bls. rags; Leigh Textile Co., American Importer, Manchester, 39 bls. cotton waste; ———, American Importer, Manchester, 122 bls. cotton waste; Royal Manfg. Co., American Importer, Manchester, 100 bls. cotton waste; M. Snedeker Corp., American Importer, Belfast, 281 bls. paper stock; Bank of N. Y. Trust Co., Peter Maersk, Kobe, 34 bls. rags; Manufacturers' Trust Co., Scythia, Liverpool, 625 bls. cotton waste; E. J. Keller Co., Inc., Pr. Johnson, ———, 368 bls. rags; E. J. Keller Co., Inc., Pr. Johnson, ———, 23 bls. bagging; E. J. Keller Co., Inc., Pr. Johnson, ———, 13 bls. linsey garments; Corn Exchange Bank Trust Co., Shohei Maru, Kobe, 50 bls. rags; Banco Coml. Italiane Trust Co., Black Tern, Antwerp, 259 bls. bagging; Royal Manfg. Co., Black Tern, Antwerp, 17 bls. cotton waste; ———, Black Tern, Antwerp, 29 bls. cotton waste; W. Steck & Co., Black Tern, Antwerp, 159 bls. jute waste; D. M. Hicks, Inc., Black Tern, Antwerp, 37 bls. flax paste; Loumar Textile By Products Co., Pulaski, Gdynia, 75 bls. bagging; G. A. Henshaw & Sons, Pulaski, Gdynia, 30 bls. rags; G. A. Henshaw & Sons, Pulaski, Gdynia, 173 bls. spun waste; E. J. Keller Co., Inc., Black Condor, ———, 284 bls. rags; Darmstadt Scott & Courtney, Motomar, Barcelona, 185 bls. old cottons; Bank of N. Y. Trust Co., Motomar, Barcelona, 118 bls. tares; ———, Motomar, Barcelona, 95 bls. bagging; Castle & Overton, Inc., Motomar, Valencia, 402 bls. rags; E. J. Keller Co., Inc., Estrella, ———, 287 bls. rags; Continental Bank Trust Co., Estrella, Barcelona, 135 bls. bagging; ———, Estrella, Barcelona, 167 bls. rags; ———, Estrella, Barcelona, 31 bls. cotton waste; Bank of N. Y. Trust Co., Estrella, Bar-

celona, 309 bls. old cottons; Bank of N. Y. Trust Co., Estrella, Barcelona, 97 bls. bagging; Bank of N. Y. Trust Co., Estrella, Barcelona, 108 bls. tares; Bank of N. Y. Trust Co., Estrella, Barcelona, 119 bls. rags; E. J. Keller Co., Inc., Maasdam, ———, 222 bls. rags; C. H. Powell & Co., Maasdam, Rotterdam, 109 bls. cotton waste; Castle & Overton, Inc., Uruguayo, Buenos Aires, 29 bls. bagging; Castle & Overton, Inc., Uruguayo, Buenos Aires, 161 bls. old cottons; Castle & Overton, Inc., Uruguayo, Buenos Aires, 25 bls. old canvas; E. J. Keller Co., Inc., Sarcoxie, ———, 327 bls. rags; E. J. Keller Co., Inc., Examelia, ———, 84 bls. rags; E. J. Keller Co., Inc., Exermont, ———, 192 bls. paper stock; ———, Examelia, Genoa, 467 bls. bagging; Chase National Bank, Examelia, Barcelona, 356 bls. rags; Banco Coml. Italiane Trust Co., Examelia, Barcelona, 179 bls. bagging; ———, Examelia, Barcelona, 107 bls. rags; ———, Examelia, Barcelona, 11 bls. bagging; Chase National Bank, Tai Yang, Kobe, 50 bls. rags; ———, Tai Yang, Kobe, 140 bls. cotton waste; E. J. Keller Co., Inc., Excambion, ———, 60 bls. paper stock; E. J. Keller Co., Inc., Schodack, ———, 49 bls. paper stock; E. J. Keller Co., Inc., Boschdyk, ———, 187 bls. paper stock .

GLUE STOCK

Banco Coml. Italiane Trust Co., Examelia, Barcelona, 300 bags.

BONE GLUE

———, Hamburg, Hamburg, 500 bags.

OLD ROPE

Banco Coml. Italiane Trust Co., American Farmer, London, 65 coils; S. Birkenstein & Sons, Montreal City, Bristol, 47 coils; Chase National Bank, Montreal City, Bristol, 101 coils; E. J. Keller Co., Inc., Gitano, ———, 85 coils.

CHINA CLAY

———, Scythia, Liverpool, 25 casks.

WOOD PULP

Lagerloef Trading Co., City of Fairbury, Helsingfors, 260 bls. mechanical pulp, 52 tons; Price & Pierce, Ltd., City of Fairbury, Wallvik, 600 bls. sulphite, 100 tons; Price & Pierce, Ltd., City of Fairbury, Hernosand, 9000 bls. sulphate, 1500 tons; ———, City of Fairbury, Domsjo, 153 bls. chemical pulp, 25 tons; Price & Pierce, Ltd., City of Fairbury, Orviken, 450 bls. chemical pulp, 76 tons; Gottesman & Co., Inc., City of Fairbury, Gdynia, 2266 bls. wood pulp, 351 tons; E. J. Keller Co., Inc., City of Fairbury, ———, 336 bls. wood pulp, 50 tons; ———, Fred. VIII, Oslo, 600 bls. sulphite, 101 tons; Perkins Goodwin & Co., Fred. VIII, Oslo, 550 bls. sulphite, 111 tons; Atterbury Bros. Inc., Fred. VIII, Oslo, 1050 bls. sulphite, 178 tons; Irving Trust Co., Fred. VIII, Oslo, 880 bls. mechanical pulp, 178 tons Bulkley Dunton & Co., Black Condor, ———, 583 bls. wood pulp, 116 tons; Castle & Overton, Inc., Gunnaren, Viipuri, 1833 bls. wood pulp; Lagerloef Trading Co., Gunnaren, Viipuri, 3048 bls. sulphite; Lagerloef Trading Co., Gunnaren, Kotka, 780 bls mechanical pulp; ———, Cliffwood, Helsingfors, 250 bls. mechanical pulp, 50 tons; Gottesman & Co., Inc., Cliffwood, Helsingfors, 1200 bls. dry pulp, 203 tons; Pagel Horton & Co., Inc., Cliffwood, Gefle, 500 bls. sulphite, 101 tons; ———, Cliffwood, Gefle, 1000 bls. sulphite, 203 tons; ———, Cliffwood, Iggesund, 375 bls. chemical pulp, 75 tons; ———, Cliffwood, Iggesund, 2200 bls. sulphite, 450 tons; ———, Cliffwood, Arnoviken, 2100 bls. sulphite, 350 tons; ———, Cliffwood, Arnoviken, 320 bls. knotter pulp, 40 tons; Price & Pierce, Ltd., Cliffwood, Hernosand, 450 bls. sulphite, 75 tons; ———, Cliffwood, Gdynia, 377 bls. wood pulp, 50 tons.

WOOD PULP BOARDS

———, Gunnaren, Viipuri, 201 rolls.

ALBANY IMPORTS

WEEK ENDING AUGUST 3, 1935

International Paper Co., Annavore, Chatham, N. B., 2400 cords pulpwood; Bulkley Dunton & Co., Brosund, ———, 2250 bls. wood pulp.

PORTLAND IMPORTS

WEEK ENDING AUGUST 3, 1935

Bulkley Dunton & Co., Gunnaren, ———, 2850 bls. wood pulp; Gottesman & Co., Inc., Rydboholm, Sweden, 2975 bls. wood pulp.

BOSTON IMPORTS

WEEK ENDING AUGUST 3, 1935

G. F. Malcolm, Inc., Scythia, Liverpool, 1 cs. tissue paper; Oxford University Press, Scythia, Liverpool, 11 cs. printing paper; Brown Bros. Harriman & Co., Scythia, Liverpool, 17 bls. cotton waste; G. M. Graves Co., Inc., Artigas, Glasgow, 82 bls. rags; ———, Komaki Maru, Kobe, 20 bls. rags; E. J. Keller Co., Inc., Tai Yang, ———, 200 bls. rags; ———, Thi Yang, Kobe, 55 bls. rags; E. J. Keller Co., Inc., Winona County, ———, 336 bls. wood pulp; Bulkley Dunton & Co., America, ———, 1625 bls. wood pulp; Bulkley Dunton & Co., Gunnaren, ———, 400 bls. wood pulp.

PHILADELPHIA IMPORTS

WEEK ENDING AUGUST 3, 1935

Philadelphia Natl. Bank, Kwanto Maru, Osaka, 100 bls. cotton waste; Corn Exchange Bank Trust Co., Kwanto Maru, Osaka, 100 bls. cotton waste; Lagerloef Trading Co., City of Fairbury, Helsingfors, 167 bls. wood pulp boards, 25 tons; Price & Pierce, Ltd., City of Fairbury, Wallvik, 300 bls. sulphite, 50 tons; E. J. Keller Co., Inc., Peter Maersk, ———, 200 bls. rags; E. J. Keller Co., Inc., Black Condor, ———, 449 bls. rags. National Vulcanized Fibre Co., Black Condor, Rotterdam, 373 bls. rags; R. F. Downing & Co., Black Condor, Rotterdam, 41 bls. rags; Chase National Bank, Black Condor, Rotterdam, 357 bls. rags; State Chemical Co., Black Condor, Rotterdam, 300 bags wood flour, 18,000 kilos; E. J. Keller Co., Inc., Sarcoxie, ———, 386 bls. rags; Castle & Overton, Inc., Sarcoxie, Bordeaux, 290 bls. rags; Castle & Overton, Inc., Sarcoxie, St. Nazaire, 1134 bls. rags; National Vulcanized Fibre Co., Sarcoxie, St. Nazaire, 44 bls. rags; E. J. Keller Co., Inc., Sarcoxie, ———, 196 bls. rags; E. J. Keller Co., Inc., Examelia, ———, 171 bls. rags; J. Andersen & Co., Cliffwood, Helsingfors, 600 bls. wood pulp; H. Reeve Angel & Co., Inc., Cliffwood, Helsingfors, 82 rolls newsprint; J. W. Hampton Jr. Co., Cliffwood, Helsingfors, 70 rolls newsprint; Stora Kopparberg Corp., Cliffwood, Skutskar, 2750 bls. dry pulp; Gottesman & Co., Inc., Cliffwood, Iggesund, 2700 bls. sulphate, 540 tons; Price & Pierce, Ltd., Cliffwood, Hernosand, 150 bls. sulphite, 25 tons; Perkins Goodwin & Co., Cliffwood, Hernosand, 1750 bls. mechanical pulp, 350 tons; Iwai & Co., Tai Yang, Kobe, 20 cs. paper; E. J. Keller Co., Inc., Black Gull, ———, 147 bls. paper stock; E. J. Keller Co., Inc., Indep. Hall, ———, 525 bls. paper stock.

WILMINGTON IMPORTS

WEEK ENDING AUGUST 3, 1935

———, City of Fairbury, Domsjo, 918 bls. chemical pulp, 150 tons; Price & Pierce, Ltd., City of Fairbury, Orviken, 4200 bls. chemical pulp, 711 tons; Lagerloef Trading Co., Cliffwood, Helsingfors, 775 bls. sulphite, 131 tons; E. M. Sergeant Co., Cliffwood, Hernosand, 3000 bls. sulphite, 500 tons.

(*Continued on page 48*)

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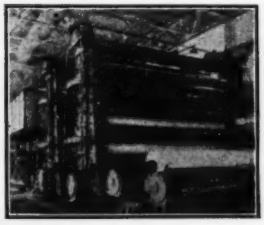
FARREL CALENDERS



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Bratislava, Czecho-Slovakei
SVANÖ AKTIEBOLAG
Svanö, Sweden

New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, August 7, 1935.

Conditions in the local paper market are considered satisfactory for the time of year. Demand for the various standard grades is more active at present than in the corresponding period of 1934. There are a good number of inquiries around for future needs and the outlook for the closing months of the year is bright.

The newsprint paper market is practically marking time. Production in the United States, Canada and Newfoundland is proceeding in adequate volume to take care of current requirements. Stocks at the mills are not excessive. No further developments have taken place in the price situation, which remains unsatisfactory.

Demand for the various grades of fine paper, including book, cover, writing, bond and ledger papers, is holding up well. Prices are steady to firm. Tissues are moving freely. The coarse paper market is displaying strength, with summer specialties attracting much interest. The paper board mills are preparing for a busy Autumn.

Mechanical Pulp

The ground wood pulp market is listless. Manufacturing operations in North America and abroad are curtailed to hold down accumulations at the mills, with the result that the statistical position of the industry is fairly sound. Prices are generally holding to previously quoted levels.

Chemical Pulp

Steadiness prevails in the chemical pulp market. Demand for both domestic and foreign grades is brisk for the season. Kraft pulp continues particularly strong, with offerings limited and quotations firm. Bleached sulphite is exhibiting a strong undertone. Other grades of chemical pulp are holding up well.

Old Rope and Bagging

The old rope market is very quiet. Demand for domestic and imported old manila rope is light. Small mixed rope is moving slowly. No radical price changes have been reported. The bagging market is steady. Scrap bagging is moving in good volume. Although gunny bagging is only moderately active, roofing bagging is buoyant.

Rags

Some improvement transpired in the domestic rag market. Demand for new cotton rags is fairly active. No. 1 white shirt cuttings are in satisfactory request for both domestic and export requirements. Roofing grades continue strong. The imported rag market is attracting more interest. Dark cottons are firmer.

Waste Paper

The paper stock market is displaying a stronger under-current. Board mill demand for the lower grades is slightly better. Quotations on strictly folded news and No. 1 mixed paper are steadier than of late. The higher grades of waste paper are in fairly good request, with quotations practically unchanged.

Twine

Business in the local twine market is fairly active for the season. Demand for the various varieties is well sustained and the outlook for the remaining months of the year is encouraging. Despite the usual keen competition for desirable orders, prices are generally holding to schedule.

IMPORTS OF PAPER AND PAPER STOCK

(*Continued from page 46*)

BALTIMORE IMPORTS

WEEK ENDING AUGUST 3, 1935

National City Bank, Black Tern, Antwerp, 182 bls. rags; Congoleum Nairn Co., Black Tern, Antwerp, 333 bls. rags; E. J. Keller Co., Inc., Black Tern, ———, 189 bls. flax waste; Congoleum Nairn Co., Sarcoxie, Bordeaux, 673 bls. rags; Congoleum Nairn Co., Sarcoxie, St. Nazaire, 161 bls. rags; National City Bank, Examelia, Barcelona, 188 bls. old cottons; Congoleum Nairn Co., Examelia, Marseilles, 200 bls. rags; Bulkley Dunton & Co., Brosund, ———, 3325 bls. wood pulp; Gottesman & Co., Inc., City of Havre, Czecho-Slovakia, 644 bls. wood pulp.

NORFOLK IMPORTS

WEEK ENDING AUGUST 3, 1935

E. Butterworth & Co., Inc., Black Tern, Antwerp, 101 bls. bagging.

NEWPORT NEWS IMPORTS

WEEK ENDING AUGUST 3, 1935

Bulkley Dunton & Co., Innaren, ———, 2625 bls. wood pulp; Bulkley Dunton & Co., Vigor, ———, 2750 bls. wood pulp; Bulkley Dunton & Co., Black Osprey, ———, 258 bls. wood pulp.

HOUSTON IMPORTS

WEEK ENDING AUGUST 3, 1935

———, Peter Maersk, Kobe, 400 bls. bagging.

Paper Men Reappointed on Black River Board

[FROM OUR REGULAR CORRESPONDENT]

WATERTOWN, N. Y., August 5, 1935—Announcement was made this week by Governor Lehman that he has reappointed J. Victor Baron, head of the Sherman Paper Company and Harry S. Gould, president of the Gould Paper Company, of Lyons Falls, as members of the Black River Regulating District Board. Mr. Gould has been connected with the board for several years. Mr. Baron, who is chairman of the board, was among the original appointees when it was created in 1919. He was appointed by Governor Smith.

Louisville Paper Co. To Handle Brown Line

Jamie W. Stepp, manager of the Printing Paper Division of Brown Company, Portland, Maine, announces the appointment of the Louisville Paper Company, Louisville, Ky., to represent Brown Company on their line of printing papers.

1864 1935

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Philadelphia-Atlantic City
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The results will surprise you!

For the past two years we have been asking you to make a practical test of our product, and want to thank our many friends for their cooperation. Our greatly increased sales prove our statements were too modest!

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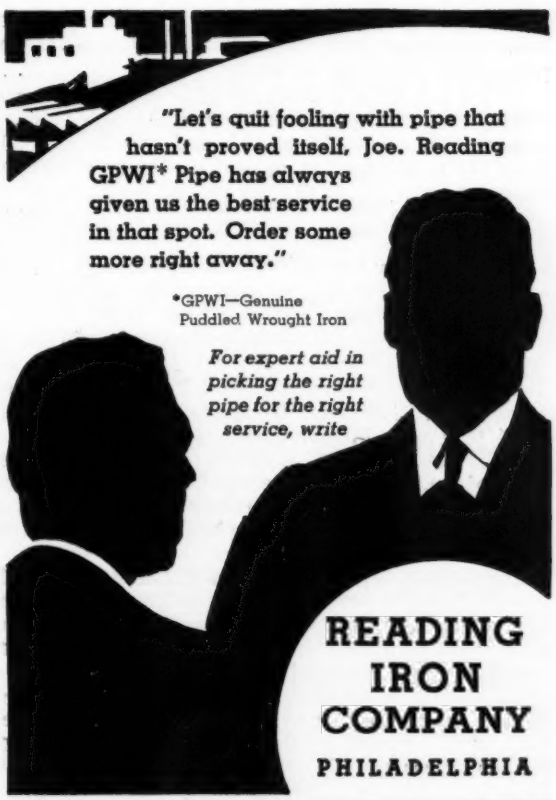

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*GPWI—Genuine Puddled Wrought Iron

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READING IRON COMPANY

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SCIENCE AND INVENTION HAVE NEVER FOUND A SATISFACTORY SUBSTITUTE FOR GENUINE PUDDLED WROUGHT IRON

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, August 7, 1935.

BLANC FIXE.—The position of the blanc fixe market is practically unchanged. Prices are holding to schedule. The pulp is quoted at from $42.50 to $45 per ton, in bulk; while the powder is selling at from 3½ to 3¾ cents per pound, in barrels, at works.

BLEACHING POWDER.—Demand for bleaching powder from the paper mills is restricted at present. Shipments against contract are moving in moderate volume. Prices are steady. Bleaching powder is quoted at from $1.90 to $2.15 per 100 pounds, in drums, at works.

CASEIN.—The casein market is quiet. Domestic standard ground is quoted at 10½ and finely ground at 11; French standard ground at 12¾ and finely ground at 13¼; Argentine standard ground at 13 and finely ground at 13½ cents per pound, all in bags, car lot quantities.

CAUSTIC SODA.—Some improvement transpired in the caustic soda market. The contract movement is normal. Solid caustic soda is still quoted at from $2.60 to $3.10; while the flake and ground are selling at from $3 to $3.05 per 100 pounds, in drums, at works.

CHINA CLAY. The china clay market is fairly active. Prices are generally holding to formerly quoted levels. Imported china clay is selling at from $13.50 to $21 per ton, ship side; while domestic paper making clay is offered at from $6.50 to $12 per ton, at mine.

CHLORINE.—Steadiness prevails in the chlorine market. The contract movement is heavy for the season. Prices continue firm. Chlorine is quoted at from $2 to $2.40 per 100 pounds, in tanks, or multi-unit cars, in ton lots, or over, at works.

ROSIN.—The rosin market continues to mark time. Paper making gum rosin is quoted at $3.80 and wood rosin at $4.20 per 280 pounds, gross weight, in barrels, at Savannah. Seventy per cent rosin size is selling at $2.39 per 100 pounds, in tank cars, at works.

SALT CAKE.—Paper mill demand for salt cake is fairly brisk. Prices are holding to schedule. Salt cake is quoted at from $12 to $13, and chrome salt cake at from $11 to $12 per ton, at works. Imported salt cake is selling at from $12 to $13 per ton, on dock.

SODA ASH.—The soda ash market is exhibiting a strong undertone. Contract shipments are moving freely. Prices are steady to firm. Quotations on soda ash, in car lots, at works, per 100 pounds, are as follows: in bulk, $1.05; in bags, $1.20; and in barrels, $1.50.

STARCH.—No radical changes transpired in the starch market. The prevailing demand is moderately active. Prices remain unchanged. Special paper making starch is quoted at $3.59 per 100 pounds, in bags; and at $3.86 per 100 pounds, in barrels, at works.

SULPHATE OF ALUMINA.—Conditions in the sulphate of alumina market are satisfactory. Prices continue firm. Commercial grades are quoted at from $1.35 to $1.50; while iron free is selling at from $1.90 to $2.05 per 100 pounds, in barrels, at works.

SULPHUR.—The sulphur market is steady. Sulphur is quoted at $18 per long ton on orders of 1,000 tons, or over, on yearly contracts; and at $20 per ton on any smaller quantity over that period. On spot and near by car loads, the quotation is $21 per ton.

TALC.—Most of the business transacted in the talc market during the past week was routine. Prices remain unchanged. Domestic talc is quoted at from $16 to $18 per ton, at eastern mines; while imported talc is selling at from $23 to $30 per ton, on dock.

Market Quotations

Paper

(F. o. b. Mill)

Ledgers	6.50	@	—
Bonds	6.00	@	—
Index	6.00	@	—
Writings—			
Extra Superfine	6.50	@	—
Superfine	6.25	@	—
Tub sized	5.75	@	—
Engine sized	5.50	@	—
Book, Cased—			
S. & S. C.	5.35	@	5.75
S. & S. C. Litho	5.60	@	6.00
M. F.	5.10	@	5.50
Coated and Enamel	5.90	@	6.55
Coated Litho	5.90	@	6.55
Tissues—Per Ream—			
White No. 1	.82½	@	.85
White No. 2	.67½	@	—
Anti-Tarnish M. G. only	1.00	@	—
Colored	.85	@	—
Kraft	.70	@	—
Manila	.67½	@	.70
Manila—			
No. 1 Jute	9.00	@	9.25
No. 2 Jute	7.75	@	8.50
No. 1 Wood	4.00	@	5.25
No. 2 Wood	3.50	@	4.00
Butchers	4.00	@	4.50
Fibre Papers—			
No. 1 Fibre	4.25	@	5.50
No. 2 Fibre	4.00	@	4.75
Common Bogus	1.50	@	3.00
Screenings	2.50	@	3.50
Glassine—			
Bleached	.11	@	—
Unbleached	.09	@	—

(The following Quotations are Delivered New York)

News, per ton—			
Roll, contract	40.00	@	—
Rolls, spot	40.00	@	—
Sheets	45.00	@	—
Kraft—			
No. 1 Northern	4.12½	@	4.75
Standard	4.00	@	—
Southern	3.87½	@	—
Boards—per ton—			
News	32.50	@	35.00
Chip	32.50	@	35.00
Sgl. Mla. Ll. Chip	45.00	@	47.50
Jute Lined Chip	45.00	@	47.50
White Patent Coated	55.00	@	57.50
Binders Boards	67.00	@	75.00

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—		
Moist	21.00	@22.00
Dry	21.00	@22.00
(F. o. b. Mill)		
No. 1 Domestic and Canadian	18.00	@24.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—			
Division 1	2.60	@	—*
Division 2	2.55	@	—*
Division 3	2.50	@	—*
Prime Qualities—			
Class 1. All Prime Easy Bleaching	2.05	@	—*
Other Than Easy Bleaching—			
Class 2. Higher than Standard	2.00	@	—*
Class 3, Standard	1.95	@	—*
Class 4, Lower than Standard	1.90	@	—*
(On Dock, Atlantic Ports)			
Kraft No. 1	1.70	@	1.80
Kraft No. 2	1.50	@	1.60
(F. o. b. Pulp Mill)			
Kraft Domestic	1.70	@	2.35
(Delivered)			
Soda Bleached	2.50	@	—

* Add 60 Cents per short ton, dock charges, for Albany; $2.00 for Lake Ports East and $3.00 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	5.75	@	6.00
Silesias No. 1	3.75	@	4.00
New Unbleached	6.25	@	6.50
New Soft Blacks	3.00	@	3.25
Blue Overall	3.50	@	3.75
Fancy	2.50	@	2.75
Washables	1.75	@	2.00
Mixed Khaki Cuttings	3.00	@	3.25
O. D. Khaki Cuttings	3.75	@	4.00
Men's Corduroy	1.50	@	1.75
New Mixed Blacks	2.50	@	2.75

Old Rags

White, No. 1—			
Repacked	3.00	@	3.50
Miscellaneous	2.75	@	3.25
White, No. 2—			
Repacked	1.75	@	2.25
Miscellaneous	1.50	@	1.75
Thirds and Blues—			
Repacked	1.50	@	1.75
Miscellaneous	1.25	@	1.50
Black Stockings	2.50	@	3.00
Roofing Rags—			
No. 1	1.35	@	1.40
No. 2	1.15	@	1.20
No. 3	.95	@	1.00
No. 4	.95	@	1.00
No. 5A	.80	@	.85

Foreign Rags

New Rags

New Dark Cuttings	1.75	@	1.85
New Mixed Cuttings	1.80	@	1.90
New Light Silesias	3.75	@	4.00
Light Flannelettes	3.75	@	4.00
Unbleached Cuttings	6.50	@	6.75
New White Cuttings	6.50	@	6.75
New Light Oxfords	3.25	@	3.50
New Light Prints	2.75	@	3.00

Old Rags

No. 1 White Linens	7.50	@	8.00
No. 2 White Linens	6.50	@	7.00
No. 3 White Linens	4.50	@	5.00
No. 4 White Linens	2.25	@	2.50
No. 1 White Cotton	4.25	@	4.75
No. 2 White Cotton	3.25	@	3.75
No. 3 White Cotton	2.50	@	2.75
No. 4 White Cotton	1.90	@	2.15
Extra Light Prints	2.00	@	2.25
Ord. Light Prints	1.75	@	1.85
Med. Light Prints	1.55	@	1.65
Dutch Blue Cottons	1.75	@	1.85
French Blue Linens	2.30	@	2.40
German Blue Linens	2.15	@	2.25
German Blue Cottons	1.70	@	1.80
Checks and Blues	1.30	@	1.40
Linsey Garments	1.80	@	1.90
Dark Cottons	1.50	@	1.60
Old Shopperies	1.00	@	1.05
New Shopperies	.95	@	1.05
French Blues	1.70	@	1.80

Old Rope and Bagging

(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—			
Foreign	1.60	@	1.70
Domestic	1.45	@	1.55
Wool Tares, light	1.65	@	1.70
Wool Tares, heavy	1.75	@	1.80
Bright Bagging	1.65	@	1.70
Manila Rope—			
Foreign	1.85	@	2.00
Domestic	1.75	@	2.00
Small Mixed Rope	1.10	@	1.35
New Burlap Cut	2.00	@	2.25
Hessian Jute Threads—			
Foreign	2.60	@	2.75
Domestic	2.80	@	3.00

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	2.45	@	2.55
Ordinary Hard White No. 1	2.10	@	2.15
Hard White No. 2	1.90	@	2.00
Soft White No. 1	1.70	@	1.80
Flat Stock—			
Stitchless	.65	@	.75
Over issue Mag	.65	@	.75
Solid Flat Book	.45	@	.50
Crumpled No. 1	.35	@	.40
Solid Book Ledger	1.50	@	1.65
Ledger Stock	1.00	@	1.10
New B. B. Chips	.30	@	.35
Manilas—			
New Env. Cut	1.70	@	1.80
New Cuttings	1.35	@	1.45
Print	Nominal		
Bogus Wrapper	.40	@	.50
Container	Nominal		
Old Kraft Machine—			
Compressed bales	1.10	@	1.20
News—			
No. 1 White News	1.20	@	1.30
Strictly Overissue	.60	@	.65
Strictly Folded	.23	@	.25
No. 1 Mixed Paper	.23	@	.25

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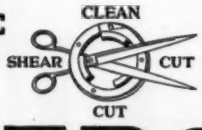
FOR ROLLS THAT ARE SQUARE-EDGED, HARD-CENTERED AND DUST FREE

SAMUEL M. LANGSTON CO.
CAMDEN, N. J.



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Cost less and much more durable than concrete or cypress. Cleaner. Will not "slime up." Over 300 now in use in mills from Maine to Minnesota.

KALAMAZOO
TANK and SILO COMPANY
Kalamazoo Michigan

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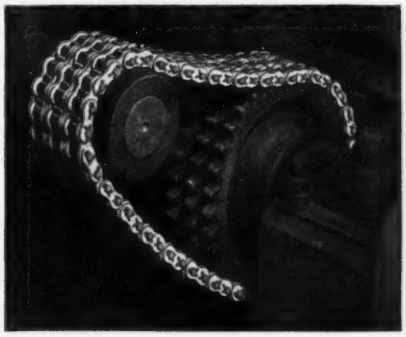
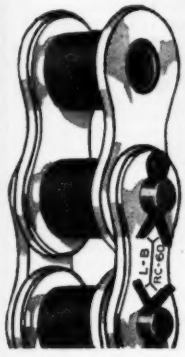
LINK-BELT SILVERLINK

THE ULTIMATE IN ROLLER CHAIN





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Oldest and Largest Producers of Casein in America

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REJECTIONS AND JOB LOTS

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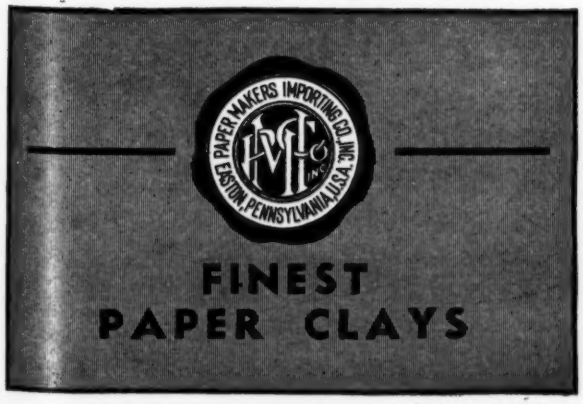
We handle your rejections strictly according to the N. R. A. Code



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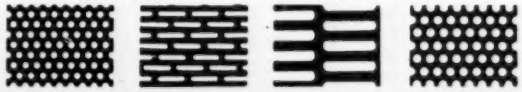
Perforations that are accurate in size

Any Metal Any Perforation



The Harrington & King PERFORATING Co.

5652 Fillmore St., Chicago, Ill. 114 Liberty St., New York, N.Y.

Twines
(F. o. b. Mill)

Coarse Polished—			
India	.11¼	@	.13¾
Belg. White Hemp	.12¼	@	.15¾
India Compress	.11¾	@	.12¼
Fine Polished—			
Fine India	.19	@	.21
Special	.17	@	.19
B. C.	.25½	@	.27½
Unpolished—			
Box	.10	@	.10½
Paper Makers	.07	@	.12
Tube Rope	.08	@	.13½
Wall Paper	.09	@	.12½
Wrapping	.13	@	.18
Special	.13	@	—
Soft Fiber Rope	.10¼	@	.10¾

CHICAGO

Paper
(F. o. b. Mill)

Rag Bond	.12	@	.50
Water Marked Sulphite Bond	.06¾	@	.11
Sulphite Bond	.05½	@	.11
Superfine Writing	.18	@	.24
No. 1 M. F. Book	.06½	@	.07¼
No. 2 M. F. Book	.05¼	@	.06¼
No. 1 S.&S.C. Book	.06¾	@	.07¾
No. 2 S.&S.C. Book	.05¾	@	.06½
Coated Book	.07	@	.12
Coated Label	.07	@	.08½
No. 1 Manila	.04¾	@	.05¾
No. 1 Fibre	.04¾	@	.05¼
No. 2 Manila	.04¼	@	.04¾
Butcher's Manila	.03¼	@	.03¾
No. 1 Kraft	4.75	@	5.00
Southern Kraft	3.88	@	4.25
No. 2 Kraft	3.88	@	4.25
Wood Tag Boards	.04¼	@	.06½
Sulphite Screenings	.03	@	.03¼
Manila Tissue	.05¾	@	.07
White Tissue	.07	@	.09

(Delivered Central Territory)

News, per ton—			
Rolls, contract	41.00	@	—
Sheets, open	46.00	@	48.50
Boards, per ton—			
Plain Chip	46.50	@	—
Solid News	50.00	@	—
Manila Lined Chip	55.00	@	—
Patent Coated	65.00	@	—
Container Lined—			
85 Test, per 1000 sq. ft.			1.70
100 Test, per 1000 sq. ft.			1.85

Old Papers
(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope Cuttings	1.70	@	2.00
No. 1 Hard White	1.40	@	1.65
No. 1 Soft White	1.25	@	1.50
Ledger & Writings	.70	@	.80
Solid Books	.60	@	.70
Blanks	1.00	@	1.05
Krafts	.80	@	.90
New Kraft Cuts	1.20	@	1.30
Manila Env. Cuts	1.25	@	1.30
Ex. No. 1 Manila	.90	@	1.00
Print Manila	.40	@	.50
Overissue News	.40	@	.45
Old Newspapers—			
No. 1	.30	@	.35
No. 1 Mixed Paper	.25	@	.30
Roofing Stocks—			
No. 1	30.00	@	—
No. 2	28.00	@	—

PHILADELPHIA

Paper
(Delivered Philadelphia)

Bonds	.05-9/10	@	.38
Ledgers	.06-9/10	@	.40
Writings—			
Fine No. 3	.05	@	.06
Superfine	.10	@	.12
Extra Fine	.15	@	.26
Fine	.15	@	.26
Fine, No. 2	.10	@	.25
Book, M. F.	.05¼	@	.06¼
Book, S. S. & C.	.05½	@	.07½
Book, Coated	.06½	@	.09
Coated Lithograph	.06¾	@	.08½
Label	.07	@	.11
No. 1 Jute Manila	6.25	@	—
Manila Sul., No. 1	5.25	@	—
Manila No. 2	3.75	@	—
No. 1 Kraft	5.00	@	—
Southern Kraft	4.75	@	—
Common Bogus	.03	@	—
News Print Rolls	40.00	@	—
Straw Board	40.00	@	45.00
News Board	40.00	@	—
Chip Board	37.50	@	—
Wood Pulp Board	70.00	@	85.00
Binder Boards—			
No. 1, per ton	75.00	@	80.00
No. 2, per ton	70.00	@	75.00
Carload lots	65.00	@	70.00
Tarred Felts—			
Regular	52.25	@	54.25
Slaters (per roll)	.84	@	.94
Best Tarred, 1-ply (per roll)	1.95	@	2.10
Best Tarred, 2-ply (per roll)	1.40	@	1.75
Best Tarred, 3 ply	2.00	@	2.25

Domestic Rags (New)
(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1	.03½	@	.04
New White, No. 2	.02½	@	.04
Light Silesias	.02½	@	.03
Silesias, No. 1	.03	@	.03½
Black Silesias, soft	.02½	@	.03
New Unbleached	.05	@	.05½
Washable, No. 1	.01½	@	.02
Blue Overall	.03½	@	.04
Cottons—According to grades—			
Washable, No. 2	.02½	@	.03
New Blue	.01½	@	.03
Fancy	.01½	@	.03
New Black Soft	.02	@	.04
New Light Seconds	.01½	@	.02
New Dark Seconds	1.50	@	1.75
Khaki Cuttings—			
No. 1 O. D.	.03	@	.04
No. 2 Mixed	.03	@	.04
Corduroy	.02	@	.03
New Canvas	.03½	@	.04½
New Black Mixed	.02½	@	.03½

Domestic Rags (Old)

White No. 1—			
Repacked	2.50	@	3.50
Miscellaneous	1.75	@	2.25
M. G.	3.00	@	3.75
Thirds and Blues—			
Miscellaneous	1.00	@	1.50
Repacked	1.50	@	2.00
Black Stockings (Export)	2.00	@	3.50
Roofing Stock—			
Foreign No. 1	.50	@	.75
Repacked	.70	@	.85

Bagging
(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.25	@	1.50
Domestic	1.50	@	1.75
Manila Rope	2.00	@	2.25
Sisal Rope	1.25	@	1.50
Mixed Rope	1.00	@	1.10
Scrap Burlaps—			
No. 1	1.25	@	1.50
No. 2	.80	@	1.00
Wool Tares, heavy	2.75	@	—
Mixed Strings	1.15	@	1.25
No. 1 New Light Burlap	2.25	@	2.50
New Burlap Cuttings	2.00	@	2.25

Old Papers
(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	2.25	@	2.30
No. 2 Hard White	1.90	@	2.00
No. 1 Soft White	1.80	@	1.85
No. 2 Soft White	1.25	@	1.30
No. 1 Mixed	—	@	.75
Solid Ledger Stock	1.50	@	1.60
Writing Paper	1.00	@	1.10
No. 1 Books, heavy	.55	@	.60
No. 1 New Manila	1.35	@	1.40
Print Manila	.50	@	.60
Container Manila	.45	@	.50
Old Kraft	1.00	@	—
No. 1 Mixed Paper	.23	@	.25½
Straw Board Chip	.20	@	—
Binders Board Chip	.20	@	—
Corrugated Board	.40	@	—
Overissue News	.50	@	—
Old Newspapers	.30	@	—

BOSTON

Paper
(F. o. b. Mill)

Ledgers—			
Sulphite	.06	@	.12½
Rag Content	.12	@	.30
All Rag	.36	@	.52½
Bonds—			
Sulphite	.07¼	@	.11
Rag Content	.12	@	.30
All Rag	.36	@	.65
Writings	.06½	@	.20
Superfines	.11	@	.31
Book, Super	.06	@	.09
Book, M. F.	.05½	@	.08½
Book, Coated	.08½	@	.18
Coated Litho	.09	@	.12
Label	.09½	@	.15
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¾	@	.06½
Manila, Sul. No. 2	.03¾	@	.04½
No. 1 Kraft	.04¼	@	.05
No. 2 Kraft	.04½	@	.04¾
(F. o. b. Boston)			
Southern Kraft	.03¾	@	.04½
(F. o. b. destination in carload lots, f. o. b. mill in less than carload lots)			
Common Bogus	.02	@	.02¼
(Delivered New England points)			
News Print Rolls	39.50	@	—
Straw Board, rolls	.009	—	@35.00
Straw Board in Sheets, basis 35s to 70s	—	@40.00	
Filled News Board	40.00	@45.00	
Chip Board	37.50	@40.00	
Chip Board (Creasing)	37.50	@40.00	
Single Manila Lined Chip	47.50	@52.50	
Single White, Patent Coated News Board (Bender)	55.00	@65.00	
Wood Pulp Board	70.00	@75.00	
Binder Boards (Standard Grade)	67.00	@75.00	

Old Papers
(F. o. b. Boston)

Shavings—			
No. 1 Hard White	2.00	@	2.20
No. 1 Soft White	1.75	@	1.90
No. 2 Mixed	.75	@	.80
Solid Ledger Books	1.40	@	1.50
Overissue Ledger Stock	1.15	@	1.30
Mixed Ledgers	.85	@	.90
No. 1 Books, heavy	.55	@	.65
No. 1 Books, light	.50	@	.60
Crumpled Stitchless Book Stock	.50	@	.60
Manila Env. Cuttings	1.30	@	1.40
No. 1 Old Manila	.60	@	.65
White Blank News	1.15	@	1.20
No. 1 Kraft	.90	@	1.00
Mixed Papers	.22½	@	.25
Print Manila	.40	@	.45
Container Manilas	.27½	@	—
Overissue News	—	@	.35
Old Newspapers	.25	@	.27½
Box Board Chips	—	@	.25
Corrugated Boxes	.32½	@	.37½
Screening Wrappers	.40	@	.45

Bagging
(F. o. b. Boston)

Manila Rope—			
Foreign	1.80	@	1.90
Domestic	1.50	@	1.75
Transmission Rope	.90	@	1.00
Jute Rope	1.50	@	1.60
Jute Carpet Threads	.65	@	.70
Gunny No. 1—			
Foreign	1.85	@	—
Domestic	1.35	@	—
Bleachery Burlap	4.00	@	4.50
Scrap Burlap—			
Foreign	1.75	@	1.85
Domestic	1.30	@	1.35
Scrap Sisal	1.05	@	1.15
Scrap Sisal for Shredding	1.20	@	1.35
Wool Tares, heavy	1.50	@	1.60
New Burlap Cuttings	1.60	@	1.75
Australian Wool Pouches	2.50	@	2.75
Heavy Baling Bagging	1.50	@	1.60
Paper Mill Bagging	1.10	@	1.25
Bagging No. 2	.70	@	.75

Domestic Rags (New)
(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.01¾	@	.02
New White No. 1	.05½	@	.06
New White No. 2	.03½	@	.04
Silesias No. 1	.04¼	@	—
New Black Silesias	.02½	@	.03
Soft Unbleached	.05⅞	@	.06½
Blue Cheviot	—	@	4.65
Fancy	.0195	@	.021
Washable	.0165	@	.0170
Cottons—According to grades—			
Blue Overalls	.04	@	—
New Black, soft	.04	@	.04¾
Khaki Cuttings	.03½	@	.03¾
O. D. Khaki	.03	@	.03¾
Corduroy	.01¾	@	.02
New Canvas	—	@	.05
B.V.D. Cuttings	—	@	.06¾
Paper Mill Bagging	1.10	@	1.25

Domestic Rags (Old)
(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	—	@	2.75
Miscellaneous	2.50	@	2.75
White No. 2—			
Repacked	1.90	@	2.00
Miscellaneous	2.00	@	2.25
Twos and Blues	1.25	@	1.50
Thirds and Blues—			
Repacked	2.00	@	2.75
Miscellaneous	2.00	@	2.25
Black Stockings	2.50	@	3.00
Roofing Stock—			
No. 1	1.20	@	1.25
No. 2	.95	@	1.00
No. 3	.90	@	—

Foreign Rags
(F. o. b. Boston)

Dark Cottons	1.35	@	1.45
New White Shirt Cuttings	5.50	@	6.00
Dutch Blues	2.00	@	2.50
New Checks & Blues	2.50	@	3.00
Old Fustians	1.75	@	—
Old Linsey Garments	1.90	@	—

TORONTO

Paper
(F. o. b. Mill)

Bond—			
No. 1 Sulphite	.11	@	—
No. 2 Sulphite	.08½	@	—
No. 1 Colored	.12	@	—
No. 2 Colored	.09	@	—
Ledgers (sulphite)—			
Ledgers, No. 1	.34½	@	—
Ledgers, No. 2	.25½	@	—
Writing	.09	@	.09½
Book—			
No. 1 M. F. (Carloads)	6.50	@	—
No. 2 M. F. (Carloads)	6.00	@	—
No. 3 M. F. (Carloads)	5.00	@	—
No. 1 S. C. (Carloads)	7.00	@	—
No. 2 S. C. (Carloads)	6.50	@	—
No. 3 S. C. (Carloads)	5.20	@	—
No. 1 Coated and Litho	12.00	@	—
No. 2 Coated and Litho	10.50	@	—
No. 3 Coated and Litho	9.50	@	—
Coated tinted	13.00	@	—
Wrapping—delivered—			
Rag Brown	4.75	@	—
White Wrap	3.50	@	—
"B" Manila	5.25	@	—
No. 1 Manila	5.40	@	—
Fiber	5.40	@	—
Kraft, M. F.	5.90	@	—
Kraft, No. 2	5.40	@	—

(F. o. b. Cars Toronto)			
News, per ton—			
Rolls (contract)	39.50	@	—
Sheets	42.00	@	—

Pulp
(F. o. b. Mill)

Ground wood	27.00	@	—
Unbleached Sulphite	42.00	@	—
Book (Class 1)	58.00	@	—
Writing (Class 2)	59.00	@	—
Select (Class 3)	60.00	@	—

Old Waste Paper
(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	2.00	@	2.30
Soft White	1.60	@	1.90
White Blk. News	1.25	@	1.40
Book and Ledger—			
Flat Magazine and Book Stock (old)	.90	@	1.00
Light and Crumpled Book Stock	.80	@	.90
Ledgers and Writings	1.00	@	1.05
Manilas—			
New Manila Cut	1.25	@	1.40
Printed Manilas	.50	@	.60
Kraft	1.00	@	1.60
News and Scrap—			
Strictly Overissue	.60	@	—
Strictly Folded	.50	@	—
No. 1 Mixed Paper	.40	@	—

Domestic Rags
(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.06	@	—
Fancy Shirt Cuttings	.02	@	—

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PAPER TRADE JOURNAL

ESTABLISHED 1872

SIXTY-FOURTH YEAR

THE INTERNATIONAL WEEKLY OF THE PAPER AND PULP INDUSTRY AND THE PIONEER PUBLICATION IN ITS FIELD

Published Every Thursday by the
LOCKWOOD TRADE JOURNAL CO., Inc.

GEO. S. MACDONALD, President. J. BANNINGA, Sec.-Treas.

Published at 34 No. Crystal St., East Stroudsburg, Pa.
Executive and Editorial Offices: 15 West 47th Street, New York
Chicago Office: 123 West Madison St.

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